

*American*

# FRUIT GROWER



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*Here is Why..* THERE IS NO OTHER TIRE LIKE THE

# Firestone

## CHAMPION GROUND GRIP

*It's Patented!*



The Only Tire That Takes  
a "CENTER BITE"

AS THE owner or operator of a tractor you are entitled to know why the Firestone Champion Ground Grip is the only tire with connected, Triple-Braced, curved traction bars.

This is the answer — The Champion Ground Grip is patented.

Much as others would like to build a tire with the performance advantages and long life of the Champion Ground Grip, they cannot duplicate the Champion tread design which gives the Champion Ground Grip tractor tire the following advantages:

- Up to 100% More Effective Cleaning
- Up to 62% More Drawbar Pull
- As Much as 91% Longer Life

And because the Ground Grip tread is Triple-Braced, the traction bars can be made higher, stronger . . . to take a deeper, more powerful bite—a "center bite" right in the heart of the traction zone.

When you buy a new tractor or replace the tires on your present tractor specify the one and only tractor tire that gives you all of the above advantages — the Firestone patented Ground Grip.

Listen to the Voice of Firestone every Monday evening over NBC  
Copyright, 1948, The Firestone Tire & Rubber Co.

**OUTCLEANS**  
UP TO 100% More Effectively

**OUTPULLS**  
UP TO 62% More

**OUTLASTS**  
UP TO 91% Longer

# Use Du Pont "Fermate"



## FOR HIGHER YIELDS, HEAD OFF DISEASES WITHOUT CHEMICAL INJURY...

It's no longer enough to control diseases. You want that, to be sure, but you also want to keep your trees thrifty and healthy. That's been the goal of Du Pont research... better but safer fungicides. As a result you have such outstanding products as "Fermate" and "Zerlate" fungicides.

**Apple and Pear Scab**—Control them effectively with "Fermate" fungicide without damage to fruit set, fruits or foliage. With "Fermate" you also control rusts, black rot, bitter rot, leaf and fruit spot and other fungous diseases, without danger of chemical russetting.

**Peaches**, as well as plums, apricots and cherries can be kept clean of brown rot with sprays or dusts of "Fermate." On fruits just before picking, Du Pont "Zerlate" fungicide is ideal. Its lighter-color residue does not show, yet protects the fruit from

brown rot after harvest. "Zerlate" also is outstanding for pecan scab. In Georgia tests, the crop was kept clean, and foliage remained green till October, long after foliage on trees sprayed with other materials was faded and withered.

**Cherry** trees keep their vigor when you control leaf spot with "Fermate." The trees keep their foliage through the summer, and there are no diseased leaves to drop and carry the disease over winter. On sour cherries, Copper-A has given outstanding results.

**Grapes** can easily be kept free of black rot with "Fermate." You'll have the full green foliage and higher yields of better-quality grapes.

can be protected with "Fermate." Use it for cranberry fruit spot, raspberry anthracnose and currant leaf spot.

**SEE YOUR DEALER** now for further information. "Fermate" and "Zerlate" are only two of the Du Pont family of pest control products made for your needs. The Du Pont Company, Grasselli Chemicals Dept., Wilmington 98, Delaware.

**DU PONT INSECTICIDES:** DEENATE\* DDT, LEXONE\* and MARLATE\* Insecticides, KRENITE\* Dinitro Spray, LORO\* Contact Insecticide, Cotton Dust No. 10, Cryolite, Lead Arsenate, Calcium Arsenate, Nicotine Products, Lime Sulfur, Phenothiazine-Lead Arsenate Mixture, Paris Green.

**DU PONT FUNGICIDES:** ZERLATE\*, FERMATE\*, and PARZATE\* Organic Fungicides, COPPER-A Fixed Copper, SULFORON\* and SULFORON\*-X Wettable Sulfurs, Sulfur Paste, KRENITE\* Dinitro Spray, Bordeaux Mixture.

**OTHER DU PONT MATERIALS:** 2,4-D WEED KILLERS, AMMATE\* Weed Killer, Du Pont Spreader-Sticker, PARMONE\* Pre-Harvest Fruit Drop Inhibitor, Spray Adhesive.

\* Reg. Trade Mark of E. I. du Pont de Nemours & Co. (Inc.)

Listen to Du Pont's *CAVALCADE OF AMERICA*—Every Monday Night, NBC Network



BETTER THINGS FOR BETTER LIVING  
... THROUGH CHEMISTRY



# NOW! THE BIGGEST FORD TRUCK LINE IN HISTORY!

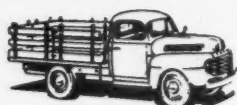


Listen to the Ford Theater,  
Sunday Afternoons—NBC network.  
See your newspaper for time and station.

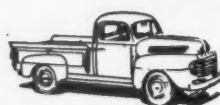
## OVER 139 NEW *Bonus\* Built* MODELS!



F-1—4,700 lbs. GVW. 8' Panel, 6½' Pickup, 6½' Platform or Stake. 114" w.b. V-8 or Six.



F-2—5,700 lbs. GVW. 7½' Platform or Stake, 8' Express. 122" w.b. V-8 or Six engine.



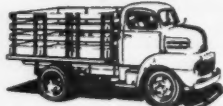
F-3—6,800 lbs. GVW. 7½' Platform or Stake, 8' Express. 122" w.b. V-8 or Six engine.



F-4—7,500 lbs. GVW. (singles), 10,000 lbs. (duals). 9' Platform or Stake. 134" w.b. V-8 or 6.



F-5—14,000 lbs. GVW. 9' & 12' Platforms or Stakes. 134" w.b. & 158" w.b. V-8 or Six engine.



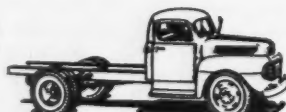
F-5 C.O.E.—14,000 lbs. GVW. 9' & 12' Platforms or Stakes. 110"-134"-158" w.b. V-8 or Six.



F-6—15,500 lbs. GVW. 9' & 12' Platforms or Stakes. 134" w.b. & 158" w.b. V-8 or Six engine.



F-6 C.O.E.—16,000 lbs. GVW. 9' & 12' Platforms or Stakes. 110"-134"-158" w.b. V-8 or Six.



F-7—19,000 lbs. GVW. 135"-159"-195" w.b. 9.00-20 maximum tires. 145 h.p. V-8 engine.



F-8—21,500 lbs. GVW. 135"-159"-195" w.b. 10.00-20 tires. 2-speed axle. 145 h.p. engine.

**NEW!** Three new truck engines . . . a new Six and two new V-8's developing up to 145 horsepower!

**NEW!** Living room comfort in the new Ford Million Dollar truck cab! New seats. New 3-way air control.

**NEW!** Two new BIG JOBS rated to carry gross vehicle weights up to 21,500 lbs.!

**SEE YOUR FRIENDLY FORD DEALER TODAY!**

**FORD**  
1948

*Bonus  
Built*

**TRUCKS**  
1948

**BUILT STRONGER TO LAST LONGER**

LIFE INSURANCE EXPERTS PROVE AND CERTIFY . . . FORD TRUCKS LAST UP TO 19.6% LONGER!



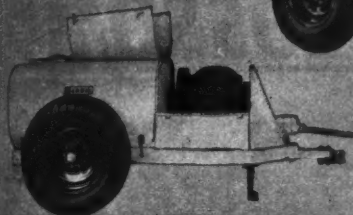
If it's a sprayer...

**Look to HARDIE!**

1—Multi-nozzle Orchard Boom Sprayers.



2—Tractor Powered Trailer Sprayers.



3—Special Booms for wood control.



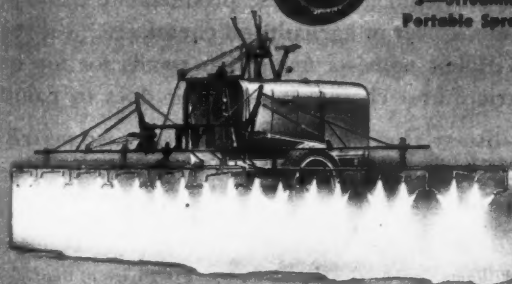
4—Engine-powered Trailer Sprayers.



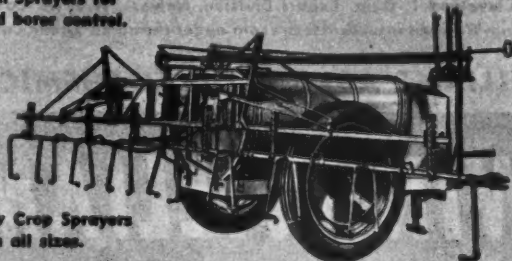
5—Streamlined Portable Sprayers.



6—Corn Sprayers for weed and borer control.



7—Row Crop Sprayers in all sizes.



Whatever may be your spray application problem you can take it to Hardie with confidence. Hardie Sprayers are doing the big spraying jobs in the world today—in the banana plantations of Central America, the Citrus Groves of California and Florida and the vast orchards of apple and peach growing centers of the United States, as well as on countless farms and ranches all over the world where sorely needed food products are brought out of the good earth. However large or small your acreage, simple or complex your spraying problem, there is a tested and proved Hardie to squarely meet the volume and the character of your application. Write for the Hardie 1948 Catalog.

**Hardie**  
Dependable Sprayers

THE HARDIE MFG. COMPANY

Hudson, Mich.  
Los Angeles 11, Calif.  
Portland 9, Oregon  
Export Dept., Detroit 26  
Canadian Office: Clarence W.  
Lewis & Son, Ltd., Grimsby, Ont.



There's many a slip—



**'TWINT BLOSSOM...**



## Your crops are your livelihood— get the most out of them

Your time, your money, your labor go *into* your fruit-growing. Are you getting the most *out* of it?

Or are you taking needless risks with your income—giving insects, disease or premature drop a chance to eat into your profits?

**PLAY SAFE!** Protect your fruit crops against the ravages of pests and diseases—use Sherwin-Williams Agricultural Chemicals! You'll find in the complete Sherwin-Williams line the *right* products to protect *your* crops. Remember . . . these products are made by the world's largest manufacturer of agricultural chemicals . . . are backed by the Sherwin-Williams name—a name that stands for top quality everywhere, in agricultural chemicals just as it does in paint!

The handy check-list at the right will tell you just *which* S-W products will assure maximum returns. Your dealer has leaflets telling *how* to use them.

The Sherwin-Williams Co., Agricultural Chemicals Division, Dept. A-1, Cleveland 1, Ohio. Export Division, Newark, N. J. (In Canada, Sherwin-Williams insecticides are sold under the name "Green Cross.")

**SHERWIN-WILLIAMS AGRICULTURAL CHEMICALS COVER THE CROPS**



# SHERWIN-WILLIAMS

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profits?

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are backed  
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n paint!

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leaflets tell-

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## AND FRUIT!

### CROP PROFIT RISKS

Codling Moth . . . . .	DDTOL* 50% WETTABLE ARSENATE OF LEAD
Scab . . . . .	KARBAM* BLACK SULFIX† SULFUR (Micro-fine) MULSOID SULFUR† (Micronized) DRY LIME SULFUR
Red Spiders and Mites . .	DIMITE* APHAMITE* KILLEX† 100 SUPER KILLEX†
Aphids . . . . .	APHAMITE* KILLEX† 100 SUPER KILLEX†
Brown Rot . . . . .	MULSOID SULFUR† (Micronized) SULFIX† SULFUR (Micro-fine)
Grape Berry Moth and Leafhoppers . . . .	DDTOL* 50% WETTABLE
Oriental Fruit Moth . . . .	DDTOL* 50% WETTABLE
Plum Curculio . . . . .	ISO-HEX* 6% WETTABLE
Cherry Leaf Spot . . . . .	BASI-COP†
Grasshoppers . . . . .	CHLORPHEEN* 42% EMULSIFIABLE HALODANE* 45% EMULSIFIABLE
Premature Drop . . . . . (Apples and Pears)	STOP-DROP*
Rose Chafer . . . . .	DDTOL* 50% WETTABLE
Poison Ivy and Other Weeds	AGRICULTURAL WEED-NO-MORE*

\* Trade Mark

† Trade Mark Reg. U. S. Pat. Off.

### S-W SAFEGUARDS

#### USING—OR PLANNING TO USE— LOW-GALLONAGE SPRAY EQUIPMENT?

Sherwin-Williams has developed a line of agricultural chemicals specifically formulated for use in the new low-gallonage spray equipment. If you're already using, or are considering using, this type of equipment, we'll be glad to give you information on suitable chemicals.



PRODUCTS OF  
**SHERWIN-  
WILLIAMS  
RESEARCH**

# AGRICULTURAL CHEMICALS



**Thiophos**  
TRADE MARK  
**3422**  
**PARATHION**

**SOLVES**  
**MITE PROBLEMS**

**KILLS MITES, WOOLLY APHIDS, SPIDERS, OTHER PESTS**

**THIOPHOS 3422** is one of the most efficient pesticides ever developed to protect fruit from insect damage. *It kills the destructive mites which multiply when DDT is used*—thus solving the serious mite problem.

Its action is sufficiently long-lasting to effect incredibly high kills against many types of fruit pests, yet the active ingredient is volatile, minimizing residue problems at harvest.

**THIOPHOS 3422 IS ECONOMICAL**—as inexpensive to apply as any other insecticide because it is effective at remarkably small dosages. For example, only  $\frac{1}{4}$  to  $\frac{1}{2}$  lb. of 15% wettable powder is needed to make 100 gallons of spray for excellent control of the European red mite or the two-spotted mite on apples; and only 1 lb. per 100 gallons is required to destroy the woolly apple aphid.

**THIOPHOS 3422** mixes readily with wettable and dusting sulfurs, insoluble coppers, DDT, benzene hexachloride, rotenone, pyrethrum and lead arsenate.

**AMERICAN CYANAMID  
COMPANY**

*Agricultural Chemicals Division*

30-X ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

WETTABLE POWDER AND DILUTE DUSTS MANUFACTURED FROM THIOPHOS 3422 PARATHION WILL BE SUPPLIED THIS SEASON UNDER DIFFERENT TRADE NAMES BY WELL-KNOWN MANUFACTURERS.

LOOK FOR THIS  
IDENTIFYING MARK  
ON THE LABEL

**Thiophos**  
TRADE MARK  
**3422**  
**PARATHION**



*The only time that Counts is Working Time*



## RIGHT FOR CULTIVATING

**...Ready for other jobs in a hurry!**

SOME PEOPLE SAY, "cultivating is an easy job." But, as every farmer knows, cultivating can actually be the most tedious task on the farm.

What a difference when you cultivate with the Ford Tractor and a Dearborn Rear-Attached Cultivator!

First of all you can attach this cultivator to the Ford Tractor in 60 seconds or less! No bolts and nuts to fuss with, no parts to get mislaid over the winter. No cumbersome cylinders to mount, no hose lines or leaky couplings to bother with.

You merely move the Ford Tractor's Hydraulic Touch Control Lever to lower the cultivator to the

depth you want it to work, or to raise it on the turns. As you make your way down the field you look forward where your cultivator is going to be, not down at the row under the tractor. Thus, you are always ahead of the game; ready—long before you get there—for a bend in the rows, an obstruction, a sticky spot, or a hard spot. You can *really* look forward because the Dearborn Rear-Attached Cultivator accurately follows the crop rows.

Yes, there's a brand new cultivating experience awaiting you. To get it, right on your farm, just ask your Ford Tractor dealer for a demonstration.

DEARBORN MOTORS CORP., DETROIT 3, MICH.



## DEARBORN CULTIVATORS

*for every row crop need*

Take a good look at the Dearborn Rigid Shank and Spring Shank Cultivators shown above. It's hard to imagine a simpler design . . . just a strong steel frame onto which the shanks are bolted. There's practically nothing to go wrong. And, except for ground engaging parts—nothing to wear out!

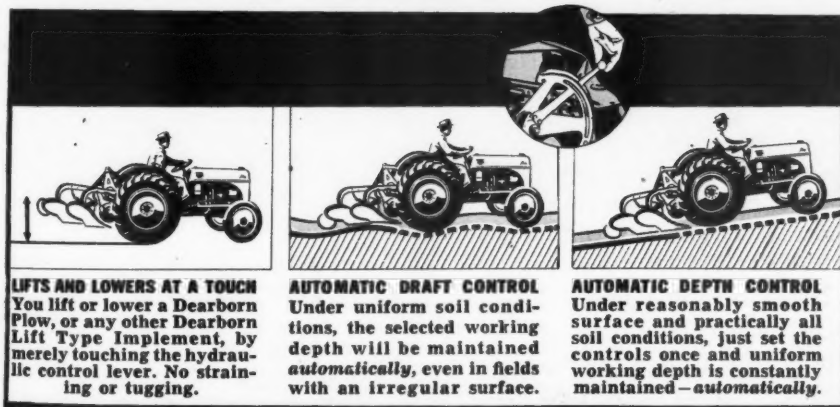
Shanks can be easily and quickly spaced to all row widths for corn, cotton, tobacco, potatoes and many other vegetables. There are many types of shovels, sweeps and shapes to choose from.



For those farmers who may prefer them, front end attachments are available in spring or rigid shank design. They are controlled hydraulically with the rear units which cultivate behind the rear tires and between the rows.

**See Your Dealer.** Ask your Ford Tractor dealer to demonstrate the Ford Tractor and Dearborn Implements. Ask him to show you his parts and service set-up. You'll see he is a good man to know better.

COPYRIGHT 1944, DEARBORN MOTORS CORPORATION



**LIFTS AND LOWERS AT A TOUCH**  
You lift or lower a Dearborn Plow, or any other Dearborn Lift Type Implement, by merely touching the hydraulic control lever. No straining or tugging.

**AUTOMATIC DRAFT CONTROL**  
Under uniform soil conditions, the selected working depth will be maintained *automatically*, even in fields with an irregular surface.

**AUTOMATIC DEPTH CONTROL**  
Under reasonably smooth surface and practically all soil conditions, just set the controls once and uniform working depth is constantly maintained—*automatically*.

# Ford Farming

**MEANS LESS WORK . . .  
MORE INCOME PER ACRE**



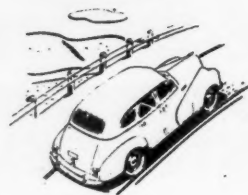
Yes, Chevrolet has long been the favorite motor car of farm owners and of all America. Men and women know that it gives more value—that it alone offers **BIG-CAR QUALITY AT LOWEST COST!** And this is truer than ever today with the advent of this *newer, smarter, finer* Chevrolet for 1948.



You're wise to choose a new 1948 Chevrolet for *fullest* value and for *fullest* motoring enjoyment around the farm, in town, or on tour. Mighty good evidence of this is the fact that *more people* drive Chevrolets, according to official nation-wide registrations, and *more people* want Chevrolets, according to seven independent nation-wide surveys, than any other make of car. And complete proof of its greater worth will be forthcoming when you see, drive and ride in this new Chevrolet. You'll find it alone gives **BIG-CAR QUALITY AT LOWEST COST!**; and that means Big-Car beauty, Big-Car comfort, Big-Car performance and dependability at *unequalled savings* in purchase price, operation and upkeep. You'll find it's first in popularity—first in demand—because it's *first in value!*



You'll prefer the smart, tasteful Big-Car styling of Chevrolet's luxurious Body by Fisher—America's first choice for fine coachcraft—found only in Chevrolet and higher-priced cars.



You'll also be more pleased with the Big-Car performance, endurance and reliability of Chevrolet's Valve-in-Head Engine—the Thrift-Master engine—and remember, Valve-in-Head design is exclusive to Chevrolet and higher-priced cars.



You and your family will enjoy Big-Car comfort and safety, too—thanks to the Knee-Action Gliding Ride, Unisteel body-construction and Positive-Action Hydraulic Brakes—another combination of features found only in Chevrolet and higher-priced cars.

CHEVROLET MOTOR DIVISION,  
GENERAL MOTORS CORPORATION,  
DETROIT 2, MICHIGAN

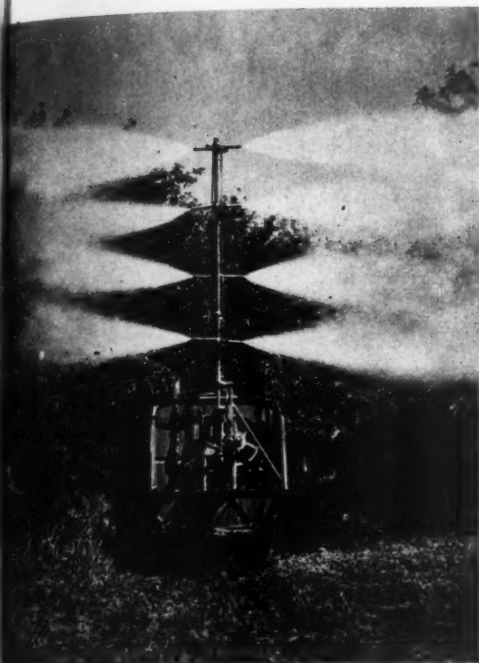
**CHEVROLET** *and ONLY* **CHEVROLET IS FIRST!**



# NEW *John* BEAN EQUIPMENT IS MAKING ORCHARD HISTORY

John Bean automatic spray masts, the Speed Sprayer, the new FMC Stericooler and Sta-fresh liquid wax application bring the mechanization of fruit protection to a new peak. Coverage is improved to protect your crop and increase its value. Faster spraying with automatic masts or Speed Sprayers cuts labor cost and gives you protection when you

need it. Stericooling eliminates much of the transportation and storage loss, protects your peach crop and increases its market value. FMC STA-FRESH liquid wax application helps keep apples orchard fresh for profitable spring marketing. For bigger profits and better fruit be sure to investigate this John Bean equipment.



## Automatic John Bean Spraymasts Cut Costs and Improve Coverage

The new 4 and 8 gun automatic John Bean Spraymasts have many exclusive features that will save you money. The masts are tubular spring steel and they carry the spray material, eliminating hoses and "plumbing." Patented self-sealing swivels transfer the material to the spray guns. The oscillator is driven by an extension of the tank agitator. One man has full control. John Bean automatic masts can be used on high pressure outfits of from 20 to 60 gallons per minute output. Send for new Spraymast catalog.

## One Man and Speed Sprayer Cover Up to 50 Acres Per Day

Speed Sprayers cover big areas quickly by displacing the air in the trees with large volume, low velocity air, saturated with spray solution. The tractor driver operates all controls, cutting labor cost. Speed Sprayers assure thorough coverage from ground to top center by enveloping trees in a solid bank of spray fog.

## New FMC STERICOLER Protects Your Peaches on the Way to Market . . .

The Stericooler is a large machine which quickly cools, and mildly sterilizes at a rate of 200 bu. per hour. This reduces losses from diseases and physiological breakdown normally incurred during holding, transit and marketing. Stericooling has been fully tested. With it all of your salable pack is marketable, and arrives in prime condition. Shelf life is frequently doubled. Peaches are packed for shipment and passed through drenching rain of 32° water with metered amounts of Hypo-Chlor added for mild sterilization. This reduces temperatures of the fruit about 40°. Write for complete information on the FMC Stericooler.

APRIL, 1948



## Sta-fresh Keeps Apples Orchard Fresh

When STA-FRESH liquid wax is applied to apples, it blends with the natural wax of the skin. Moisture content and appearance are maintained so that you have orchard fresh apples for spring marketing. Write for a new catalog on STA-FRESH application.

**JOHN *fmc* BEAN**

LANSING 4 MICHIGAN

DIVISION OF FOOD MACHINERY CORPORATION

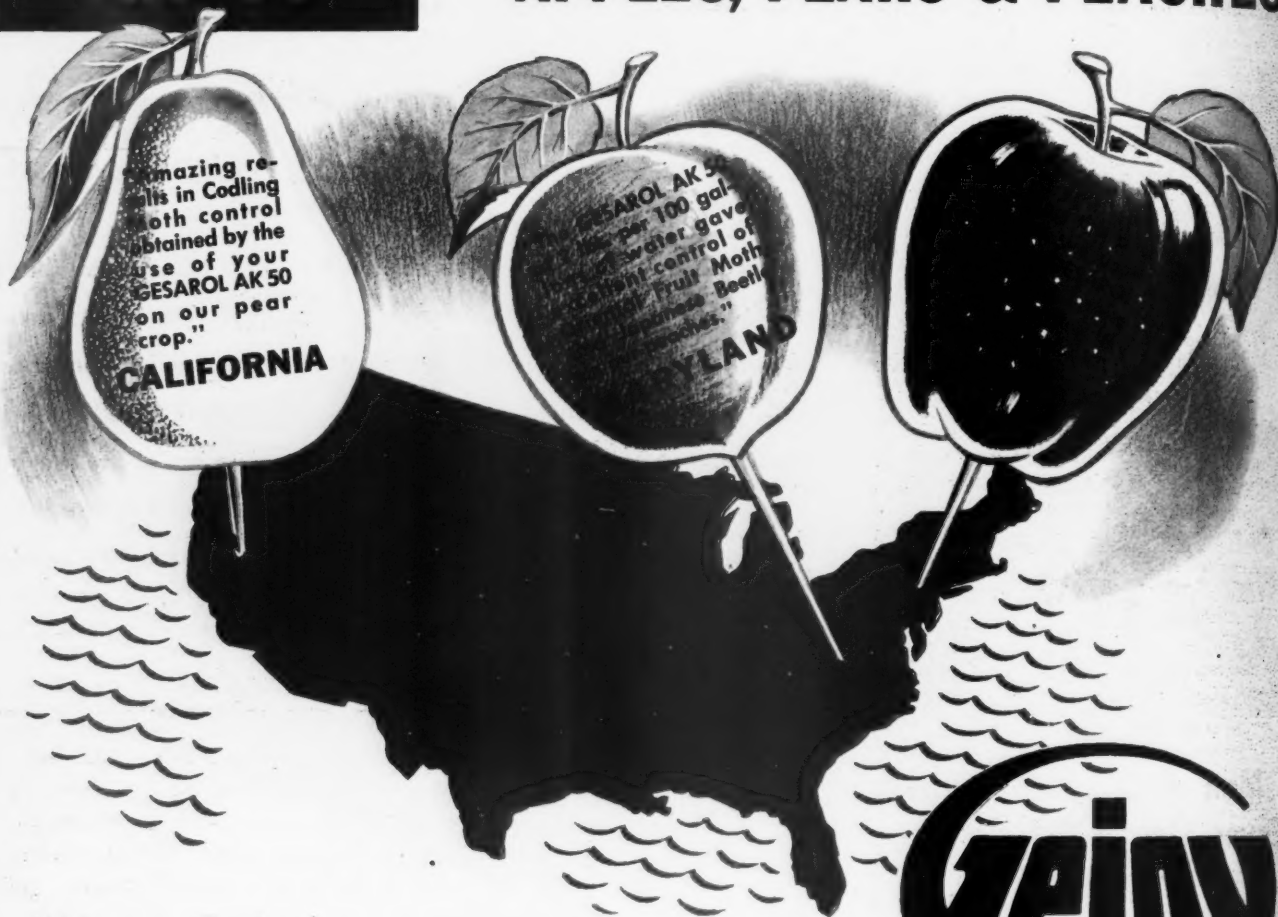
*Reports like these*

**FROM NEW YORK TO CALIFORNIA**

*show It Pays to Use*

**GESAROL  
AK 50**

**for Pest Control on  
APPLES, PEARS & PEACHES**



From all over the country evidence keeps piling up from fruit growers to further confirm the amazing effectiveness of GESAROL\* AK 50—evidence which demonstrates over and over again the dollar and sense wisdom of using this tried-and-proven DDT composition—formulated by Geigy Company—  
"Originators of DDT Insecticides."

\*Reg. U.S. Pat. Off.

**NOTICE TO DISTRIBUTORS!**  
A few desirable Territories still open. Write us if you are interested in handling an established, fast-selling line of DDT Compositions.

**GEIGY COMPANY, Inc.**  
89 Barclay St., New York 8, N.Y.



**ORIGINATORS OF  
DDT  
INSECTICIDES**



APRIL

1948

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No. 4

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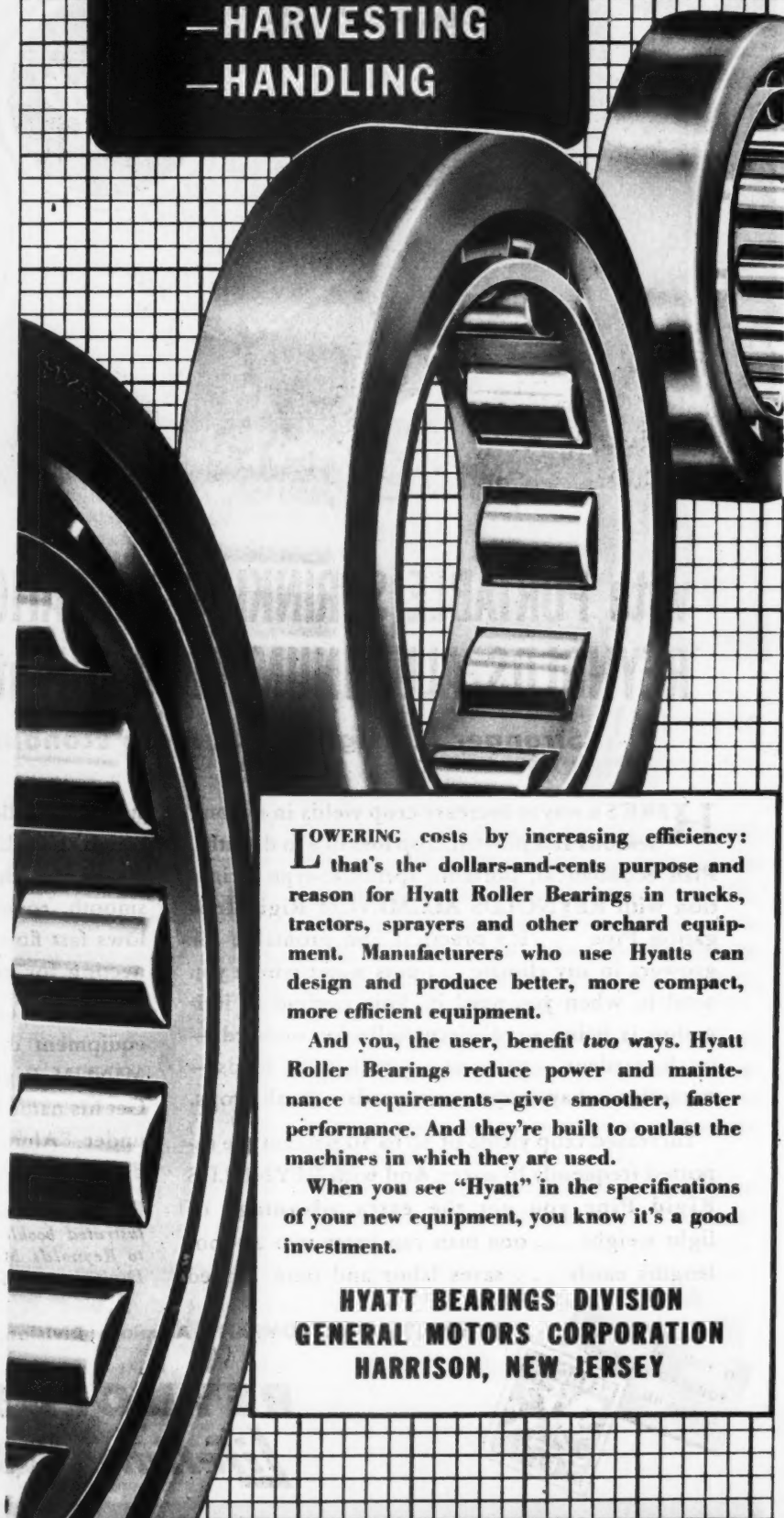
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IN U.S.A.]

## CUTTING THE COST OF—GROWING —HARVESTING —HANDLING



**L**OWERING costs by increasing efficiency: that's the dollars-and-cents purpose and reason for Hyatt Roller Bearings in trucks, tractors, sprayers and other orchard equipment. Manufacturers who use Hyatts can design and produce better, more compact, more efficient equipment.

And you, the user, benefit *two* ways. Hyatt Roller Bearings reduce power and maintenance requirements—give smoother, faster performance. And they're built to outlast the machines in which they are used.

When you see "Hyatt" in the specifications of your new equipment, you know it's a good investment.

**HYATT BEARINGS DIVISION  
GENERAL MOTORS CORPORATION  
HARRISON, NEW JERSEY**

# HYATT ROLLER BEARINGS





## with PORTABLE SPRINKLER IRRIGATION using REYNOLDS ALUMINUM Rigid Irrigation Pipe

**Stronger . . . Lighter . . . More Economical**

**H**ERE'S a way to increase crop yields in normal seasons and prevent crop loss due to drouths. Plan economical, portable sprinkler-type irrigation with REYNOLDS ALUMINUM Rigid Irrigation Pipe . . . it's practical and profitable for growers in any climate . . . puts water where you need it, when you need it. This method of irrigation is being used successfully for orchards—truck gardens—pastures—small grain fields—nurseries—hay crops—vineyards—bush crops.

Increased crop yields of 30 to 50 percent are reported frequently by users. And with REYNOLDS Rigid Pipe you get the extra advantage of light weight . . . one man can carry two 20-foot lengths easily . . . saves labor and time. Added

strength of alloys provides resistance to wear from rough handling, takes higher water pressure, means less chance of dents or breaks. Uniformly smooth, round surface cuts water resistance, allows fast flow plus rapid connecting and disconnecting for easy portability.

It's wise to plan now. Consult the irrigation equipment dealer who sells REYNOLDS ALUMINUM Rigid Irrigation Pipe in your locality. Get his name from the Reynolds Sales Office listed under "Aluminum" in your classified telephone directory.

**FREE!** Complete information in handy illustrated booklet. Get your copy by writing to Reynolds Metals Company, Aluminum Division, 2037 S. Third St., Louisville 1, Ky.



REYNOLDS METALS COMPANY, Aluminum Division, Louisville, Ky.



## REYNOLDS *Lifetime* ALUMINUM

REYNOLDS' PIONEERING MADE ALUMINUM COMPETITIVE . . . TAKE ADVANTAGE OF IT!

Read  
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APR

# LETTERS TO THE EDITOR

## Reader Describes Safe Picking Ladder

Dear Sir:

I have often seen pictures of fruit being picked, and have seen fruit harvested in other orchards than my own, and my observation has been that the conventional type picking ladder is neither safe nor adequate for the work required. I use a ladder that is safe and steady whether used on soft, sandy ground or on slippery sod. It works equally as well on steep hillsides, and it does not injure the branches of the trees or knock off fruit.



My ladders are wide at the bases so they do not tip easily when pickers take long reaches from the top rungs. They have wide rungs that women can stand on without any trouble. That is important where women do a lot of the picking. Riverdale, Mich. Martin Joiner.

## How Many Bees?

Gentlemen:

I would like to know from a reliable source how many hives of honey bees would be needed to pollinize 60 acres of bearing cherry trees in an average year. I would also like to know how they should be placed in the orchard. Bellevue, Ohio

Charles Pickett

*During favorable weather conditions, and with good, strong bee colonies, 30 hives should pollinate your 60-acre cherry orchard. If weather is unfavorable, more colonies are necessary. The hives should be placed in groups of four or five throughout the orchard.—Ed.*

## Can You Name It?

Gentlemen:

When I was a boy, going back 45 or 50 years, we lived on a farm in northern Illinois, and had a variety of apple that I would like to find out about. It was yellowish-green, about the size and shape of a large Grimes Golden, ripened late in August, was very juicy, and had a very distinct lemon flavor when one took a bite. This lemon flavor was so pronounced that we kids spoke of them as lemon apples.

I would appreciate it very much if you would identify this variety and tell me of a nursery where it can be bought. Chicago, Ill.

E. H. Bolz

*This is one of those old varieties that is hard to trace. Perhaps it was one of the varieties known in some localities as the Lemon Pippin. These include the Yellow or Golden Pippin, Yellow Newtown, Newmark Pippin, Belmont, Ortley, or the Golden*

*Pippin—sometimes called English Golden Pippin.*

*Perhaps one of our readers can give more definite information on this elusive old variety.—Ed.*

## A Suggestion and Some Memories

Dear Sir:

I thought my letter would be of interest to peach growers and of some profit to them too. I am 70 years old, but I still operate my fruit farm as a hobby.

I started to grow my five-acre peach orchard 20 years ago, following the mulch system. It has never been plowed. I have used about 6 pounds of nitrate each year, and I have never missed a crop in the last 15 years.

Most of my fruit is sold on my roadside stand which is on a main highway. I advertise, and my trade comes from as far as 100 miles.

I wish to say that I come from a family of fruit growers. My grandfather, James Upton, shipped as many as 100,000 bushels of apples a year by boat on the Erie canal, and he left a fortune of \$500,000 when he died at the age of 60. His beautiful home still stands on Ridge Road, about four miles from Rochester, N.Y. I wish you all could see it.

Grandfather was a personal friend of Governor Stanford of California who loaned him \$1,000 so that he could start west. However, he stopped at Greece, N.Y. and bought 600 acres at \$1.00 an acre, and there he planted the first peach orchard in western New York.

Red Creek, N.Y.

T. C. Upton

## Orchard Heating

Gentlemen:

Last spring I planted 125 trees, mostly apples, peaches, and cherries. I mulched them last fall, and at present they are almost covered with snow which is 5 feet deep.

Now that spring is coming, I am wondering about heating my orchard. My garage man says I can have a lot of waste oil drained from cars. Is that good?

Not knowing the least thing about pots, I had in mind getting about 30 5-gallon cans, filling them with about 3 gallons of waste oil and placing them on the lee side of the small trees, to be lighted when the radio says "freezing." How does this sound to you?

West Hempstead, N.Y. Ralph W. Hughes

*Orchard heating for frost prevention is not an operation to be entered into lightly. An "all or nothing" proposition, it involves strenuous work which must be done every night the temperature reaches the danger point. Waste crank case oil may be used satisfactorily, although it must be kept in mind that a reliable source of supply is essential if heating must be extended longer than is expected. A Virginia orchardist who has heated successfully for six years recommends the use of three 1-gallon cans placed in groups between the trees at a rate of about 200 cans for every 100 trees. In the West, growers place one 5-quart and one 10-quart lard-pail-type heater per tree. It is advisable to have your own thermometer to help determine when to start heating.*

*For sale by the Superintendent of Documents, Washington 25, D.C., for 15c, is a reprint of the USDA Farmer's Bulletin 1588 "Frost and the Prevention of Frost Damage," by Floyd D. Young. Growers who are contemplating orchard heating should have this bulletin.—Ed.*

# TRAVERSE BOOMS

## THE AUTOMATIC SPRAYING UNIT



## Make Money This Year

IN SPITE OF LOW FRUIT PRICES AND HIGH LABOR COSTS.

THE AMAZING NEW TRAVERSE BOOM MAKES THIS POSSIBLE BECAUSE IT WILL SAVE ITS COST IN LABOR ALONE THE FIRST SEASON USED.

IT WILL ENABLE YOU TO HANDLE A MUCH LARGER ACREAGE WITH YOUR PRESENT SPRAYER. ONE MAN RUNS THE TRACTOR, THE TRAVERSE BOOM RUNS ITSELF.

BUT MOST IMPORTANT, GROWERS HAVE PROVED IT WILL DO A BETTER JOB OF SPRAYING THAN IS POSSIBLE WITH HAND APPLICATION.

THE TRAVERSE BOOM IS AN INVESTMENT THAT PAYS DIVIDENDS FROM THE START. THERE IS STILL TIME FOR YOU TO ENJOY THESE BENEFITS IN 1948 BUT DON'T DELAY.

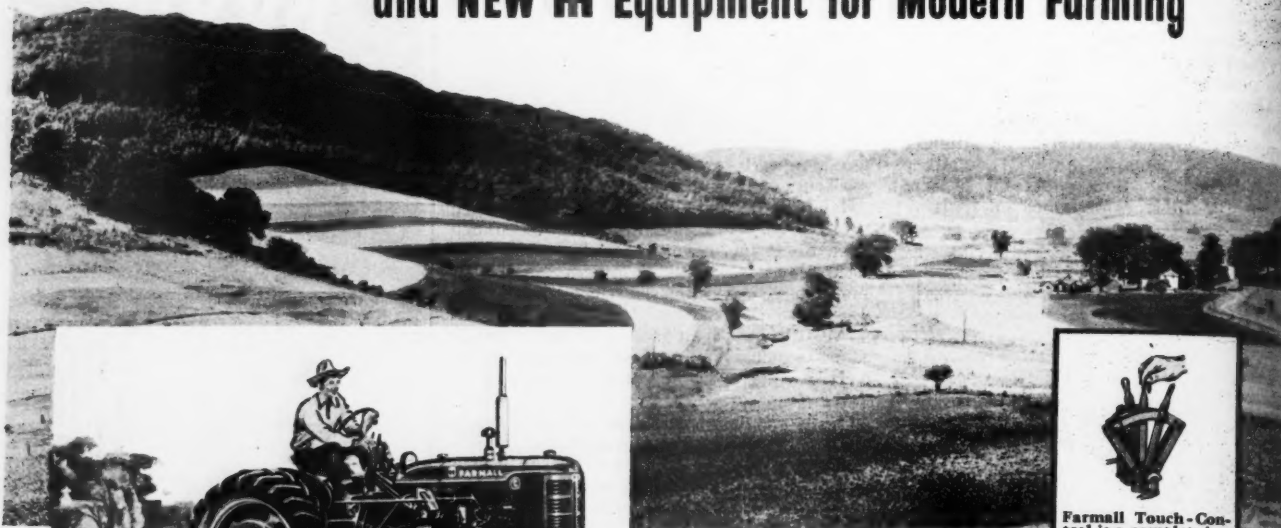
WE HAVE DEALERS IN MOST FRUIT AREAS WHO WILL HELP YOU WITH YOUR PROBLEMS. IF NONE ARE NEAR YOU WRITE TO US.

**GRAND TRAVERSE ORCHARD SUPPLY CO., INC.**  
TRAVERSE CITY, MICHIGAN  
PACIFIC COAST GROWERS WRITE TO  
RUEL R. STICKNEY, UKIAH, CALIF.



# Spring on the Farm—

and NEW IH Equipment for Modern Farming



New Farmall C, equipped with FARMALL TOUCH-CONTROL... one of five all-purpose tractors with matched machines for every size farm, and for every crop and soil condition.

It's Spring, 1948... and new International Harvester Farm Machines are out in the fields, all over America.

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Your IH Dealer is the man to see about all that's new in IH Farm Equipment. Every effort will be made to provide you with the machines you need.

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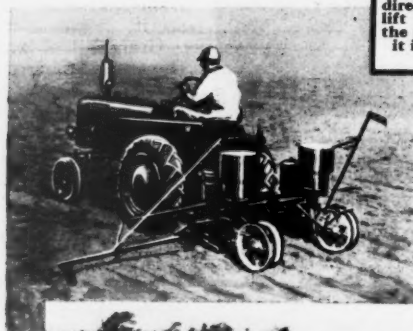
## INTERNATIONAL HARVESTER



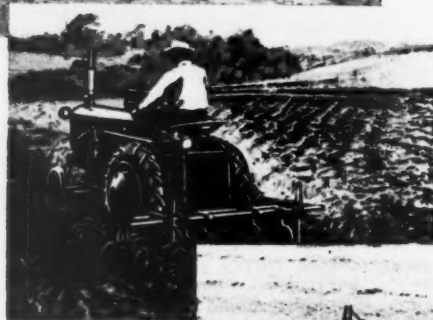
Leader in Farm Equipment Progress



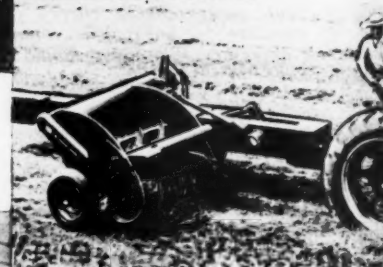
Farmall Touch-Control is a complete implement control. Hydraulic power in both directions — power to lift implement from the ground and force it into the ground.



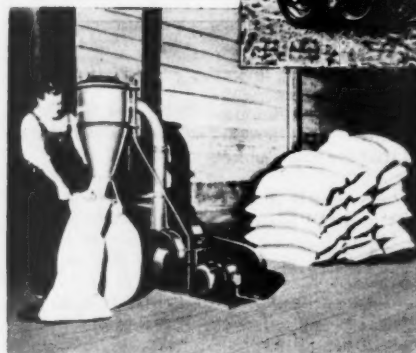
← New FARMALL SUPER—A tractor equipped with drill planter and fertilizer attachment. Farmall is a registered trade-mark. Only International Harvester builds Farmall Tractors.



Smallest Farmall—the new FARMALL CUB tractor, with cultivator. This is a great combination for fast cultivation.



↑ Speed up the hay harvest with the new No. 45 Pickup Baler. Self-feeding, fully automatic. . . Farmall H (or tractor of equivalent power) handles it nicely. No auxiliary engine needed.



← The new, small No. 4-E hammer mill to be powered by a 3, 5 or 7½ hp. electric motor or the Farmall CUB tractor. Handles all types of grains and feed. Ideal for overhead bin installations.



# Here Is A Firsthand Report On FRUIT GROWING AND MARKETING IN EUROPE



International News Photos

## About The Author

Fred A. Motz has just recently returned from Europe where he has observed, firsthand, the conditions there which will affect American fruit growers directly and indirectly. In this article, which is adapted from a talk given at the APS Centennial meeting in St. Louis in February, he gives a comprehensive summary of his observations and attempts to show the American grower how he fits into the world picture.

By FRED A. MOTZ

**D**URING THE last three years, I have been in rather intimate contact with European postwar problems, visiting many devastated countries, and living well behind the "Iron Curtain." Seven years of war have left most of Europe paralyzed, and our postwar objective there is to help the ravaged countries rehabilitate their economies.

Before the war, United States exports of fruit and fruit products averaged about 89 million dollars annually, the largest part of which was marketed in Europe. Fruit ranked ninth in importance among all United States exports, and in the case of agricultural commodities was exceeded in value only by cotton and tobacco.

The apple and pear industries have a very definite historical dependence upon foreign markets, and will continue to be unfavorably affected by the loss of such markets. The curtailment of export outlets affects not only those states which normally produce for the export market, but also every producer who has fruit to sell. Midwest growers are already beginning to feel the pressure of surplus fruits which ordinarily would be moving overseas, and fruit people everywhere are asking when, and under what conditions, it will be possible to sell abroad. This is an extremely hard question to answer.

Conditions throughout Europe are very bad, and imports are restricted

largely because of the lack of acceptable foreign exchange. The limited dollar balance is being reserved for the importation of goods classified as essential. Fruit, while desired, is not regarded as essential; therefore, fruit imports from hard-currency countries are largely excluded from the list.

The situation could be summed up in a few words—no dollars, no fruit. Although the European fruit crop this last year was one of the largest on record, a shortage is anticipated by late winter or early spring. Whether imports will be permitted later will depend upon conditions which are presently unknown. The appetite for fruit, created during the 1920's and 30's, has in no sense diminished. To the contrary, it is keener than ever because of the scarcity.

Present imports are confined largely to neighboring countries whose currencies are equally soft, or from colonies, if they have any. Furthermore, most trading is done on a barter basis which is not only

difficult but also, in many instances, unsatisfactory. Barter usually means state-trading deals which are arranged or transacted through commercial-trade agreement. As an example, the French government arranged to exchange raffia for Italian chestnuts. In the case of France, present imports are confined largely to those from the colonies, mostly North Africa, and from neighboring countries such as Switzerland, Belgium, Holland, and Italy. Most of the trade with these countries is on



a barter basis and with countries with which trade agreements have been established.

The complications and difficulties of present day trading can perhaps be illustrated by the following example. Switzerland had a good crop of apples and was promoting an export program. France had only a moderate crop, and without price controls, the limited offerings commanded high prices. In order to force down the price of French apples, the French government permitted the importation of Swiss apples. Swiss importers in turn brought in cheap apples from Italy and Belgium.

Aside from the loss of trees as a result of winter killing, the condition of European orchards is, on the whole, surprisingly good. I passed through some of the more important deciduous fruit producing areas in Italy in the spring of 1945 and was amazed to see the way in which the orchards had survived. Peaches showed signs of neglect, but apples

(Continued on page 35)

# IRRIGATION PROJECTS

## CREATE NEW FRUIT LAND IN WASHINGTON

By J. H. SCHULTZ and W. J. CLORE  
Washington Agricultural Experiment Station

**W**ESTERN reclamation vitally concerns the national economy. To many growers in other regions, it means competition; but does it? Since the State of Washington ranks high in the production of all deciduous fruits, this question is extremely important in the thinking of the fruit growers throughout the United States.

Washington growers have long recognized that the great distance to large markets is a serious factor in marketing large quantities of fresh fruit. It is also generally recognized that the acreage of fruit now in production in this State, under the present economic conditions, largely takes care of the fresh market demands. The fruit industry has realized that future plantings must be made on the basis of being able to dispose of large quantities to processors. It is this "outlook" that fruit growers in Washington are depending upon as they consider new acreages on the Roza and Columbia Basin projects.

The "Columbia Basin," geographically speaking, includes the drainage basin of the Columbia River. In this sense it covers an area of nearly 260,000 square miles which includes most of Idaho, Washington, and Oregon and parts of British Columbia, Montana, Wyoming, Utah, and Nevada. This is an area practically equal to the State of Texas in size. Within this great region are many small irrigation projects; some old, some new, some still in the planning stage.

The greatest and most spectacular of them all is the Columbia Basin Reclamation Project (see map) located in eastern Washington. It is this project proper which is usually referred to as the Columbia Basin Project.

Next in size, and first in importance, at present, is the Yakima Project. This is located on the eastern slopes of the Cascade Mountains in Yakima, Kittitas, and Benton Counties. It occupies a comparative-

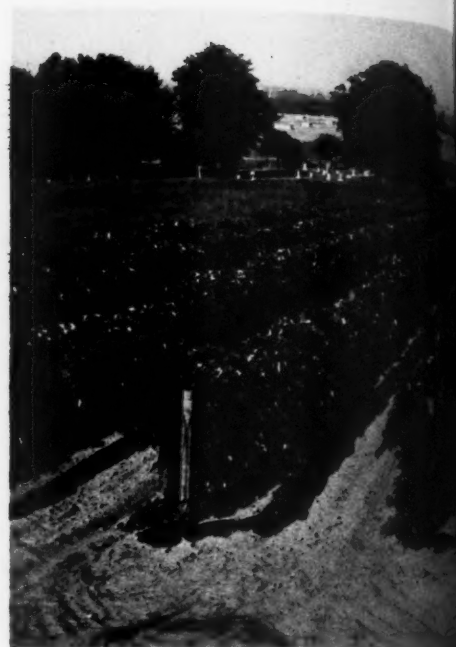
ly narrow strip of land on both sides of the Yakima River from Easton to Kennewick, where the river enters the mighty Columbia, a distance of about 175 miles.

Included in the Yakima Project are the Kittitas, Tieton, Sunnyside, Wapato, Roza, and Kennewick divisions. Of these, the Kittitas division is of little importance for commercial fruit production. The Kennewick division, developed in 1918, has 35 percent of its acreage in fruit. Additional acreage is still in the planning stage. The Tieton division, in which 88 percent of the irrigated land is in tree fruits, achieved some fame a year ago by being the first Federal irrigation project to pay off the last dollar of its construction cost to the United States Government. It was completed in 1925. This, like all Federal irrigation projects in Washington, was built by the Government with the entire construction cost being repaid to the Government on a long-term basis. In addition to the Tieton, the Wapato and Sunnyside divisions comprise the bulk of the tree fruit and grape acreage in the Yakima Project.

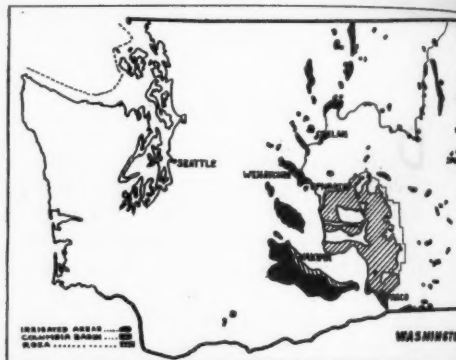
Smaller, but very important, irrigation projects are located in the Wenatchee and Chelan areas and northward to the Canadian border. Most of these are privately constructed and financed irrigation projects. Many are in localized areas particularly adapted to fruit production, which is their major crop. Apples are the leading crop in this area, followed by pears, cherries, apricots, peaches, plums, and grapes.

### The Roza

The Roza development is giving a preview of things to come on certain areas of the Columbia Basin Project. Construction of the Roza is not yet completed. It includes 72,000 acres of irrigable land. Of this, 45,000 acres are under gravity flow and 27,000 acres are above the main canal. These will be served by pump-



Above—Part of world's largest Concord vineyard, made possible by irrigation.  
Right—Flume carries water for 72,000 acres in Yakima Valley.



This map of Washington State shows the location of the Roza and Columbia Basin irrigation projects.

ing plants which are now under construction. The first water was applied to about 3,300 acres in 1941, and this has increased each year until about 45,000 acres received water in 1947.

The Roza land is a relatively narrow strip paralleling the long-established Sunnyside division. As a result, it extends and supplements the production and commerce of the Yakima Valley without the need for development of any new towns. Completion of the Roza irrigation system in the next few years will see the fulfillment of the lifetime dreams and efforts of many old settlers in the Yakima Valley.

What crops will the Roza grow? It will grow exactly those crops which the older parts of the Yakima Valley have long grown. Only the proportion of various crops will be altered. Roza land is at a higher elevation than adjacent land nearer the Yakima River. The elevation increases up to about 500 feet above

AMERICAN FRUIT GROWER



Concord vineyard,  
72,000 acres

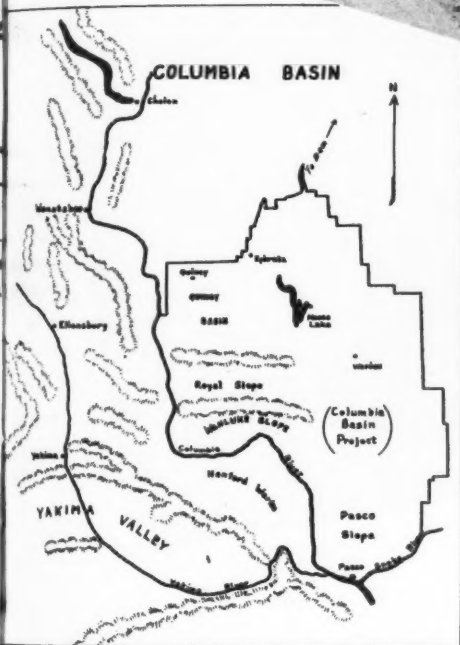
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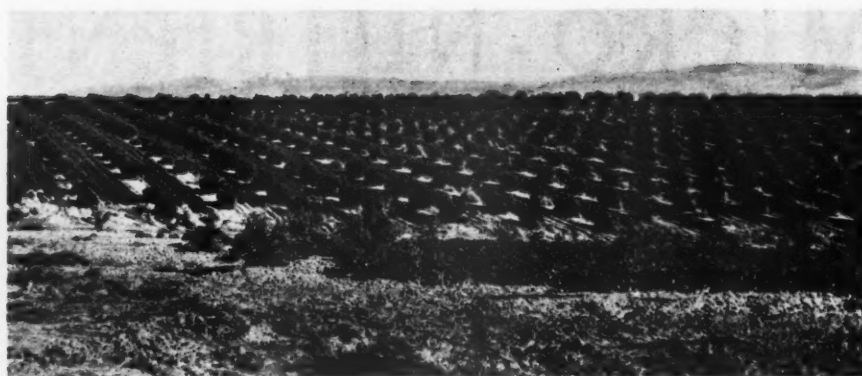
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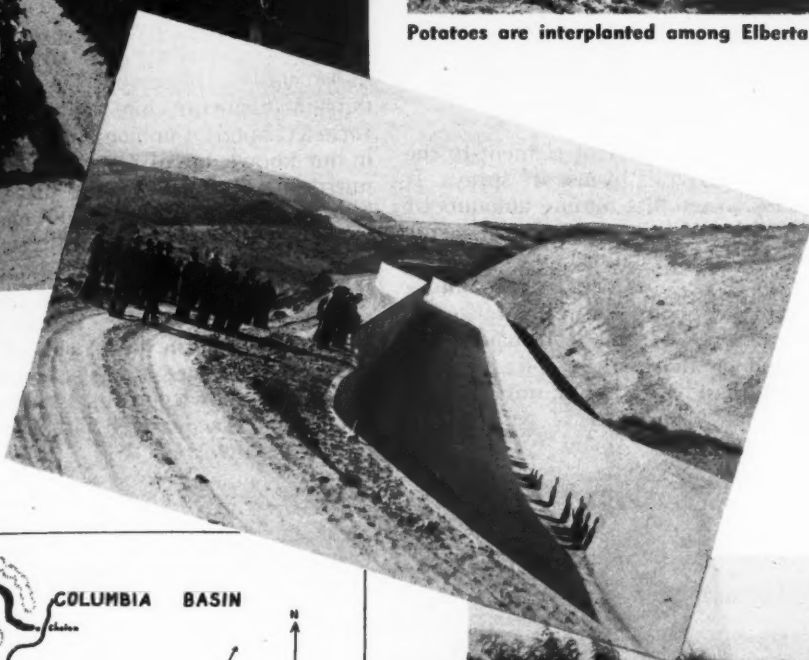
Here is a detailed drawing of the Columbia Basin Project which will create 30,000 acres for fruit.

nearby previously irrigated land. Associated with this are some changes in soil type but, to the fruit grower, the accompanying reduction in frost hazard and desirable topography are most important.

It is much too early to accurately judge the ultimate fruit acreage on this new land. Unless a farmer has an independent source of income, or has other land bringing cash returns, he must normally grow crops which



Potatoes are interplanted among Elberta peaches for cash crop in new Roza project.



A peach grower in the lower Yakima Valley looks over his two-year-old planting of Elberta trees on the new Roza irrigation project.

will bring quick cash returns to meet the heavy cost of bringing new land under irrigation. Consequently, much land which is intended for eventual fruit production is first planted to cash crops such as potatoes, vegetables and cannery crops, dry beans and alfalfa. In the long run, production costs and commodity prices will determine the proportion of crops grown.

Because of its favorable location and topography, the fruit plantings on the Roza will probably follow the pattern on existing irrigation projects. Nearly one-fourth of the irrigated land of the State of Washington is in orchards, vineyards, and nuts. About two-thirds of the State's

fruit acreage and 85 per cent of the fruit production is under irrigation. The 1945 United States census for agriculture showed the approximate fruit production on irrigated land in the State of Washington as:

Apples	31,970,000 bu.
Pears	7,617,000 bu.
Peaches	2,363,000 bu.
Apricots	18,800 tons
Cherries—sweet	15,547 tons
Plums & prunes	19,175 tons
Grapes	13,249 tons

Based on present and indicated future plantings, it now appears likely

that the eventual fruit acreage on the Roza may approximate the following figures:

Apples	700 acres	1%
Pears	1,500 acres	2%
Apricots	2,200 acres	3%
Cherries—sweet	2,200 acres	3%
Peaches	7,000 acres	10%
Plums & prunes	2,200 acres	3%
Grapes	7,000 acres	10%

Totals 22,800 acres 32%

The Roza will probably never be an important apple area, as the climatic conditions are less favorable than those found in, or near, the Cascade Range. Pears are better adapted to this climate than apples, but

(Continued on page 40)



# MICRO-NUTRIENT ELEMENTS— THEY PLAY AN IMPORTANT ROLE IN PLANT NUTRITION

By D. R. HOAGLAND and C. EMLÉN SCOTT  
*University of California*

IT HAS NOW BECOME well-known that green plants require minute amounts of certain chemical elements besides the so-called classical list of carbon, hydrogen, oxygen, nitrogen, sulfur, phosphorus, potassium, calcium, magnesium, and iron. The new additions to the list of essential elements that are widely accepted are boron, zinc, manganese, copper, and molybdenum. Because these elements are needed in minute amounts, some investigators have preferred to call them "micro-nutrient" chemical elements.

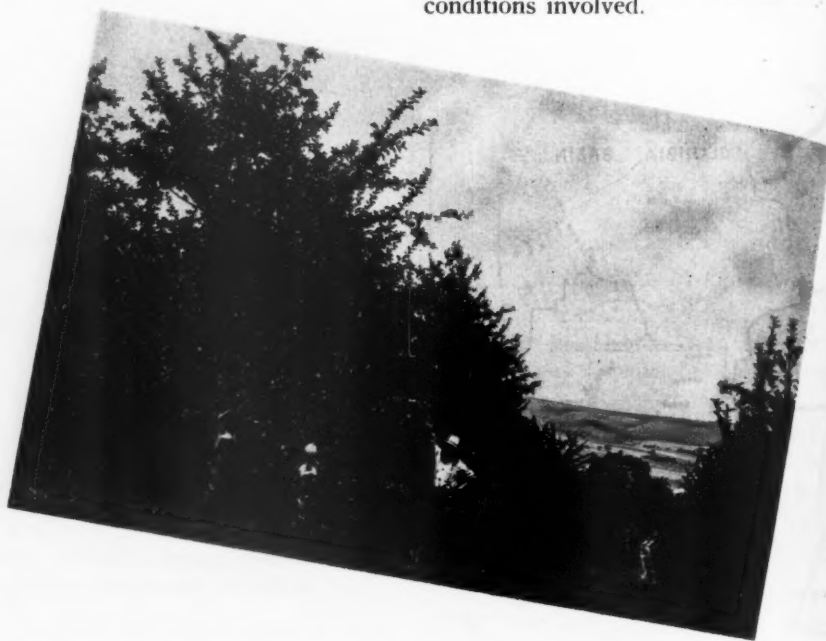
The question may now occur to some readers, "Why, if only such minute amounts of some chemical elements are required by plants, do these elements have any practical interest for the agriculturist? Surely, enough of such elements would always be present in the soil."

The reason lies in the concept of "availability" of nutrient elements in a soil. Even though the deficient element will nearly always be present in the soil, it may not be in a condition to be absorbed and so the plant is more or less starved. A striking illustration may be offered from the experience of the writer and his colleagues in California. In certain soils in which fruit trees were diseased because of deficiency of zinc in the plant, the soil, in fact, contained within the root zone enough *total* zinc for the requirements of the trees for centuries.

This brings up another question: "If the amounts of the micro-nutrient elements essential are so small and if sometimes the soil cannot supply enough of one or more of these elements, is it important that in ordinary fertilizers there often exist very slight amounts of the micro-nutrient elements as impurities?"

We shall not attempt any general answer to the question but wish to recall that in some soils the very factors which made the deficient element unavailable may cause small amounts added as impurity in a fertilizer to be ineffective. Sometimes the remedy is

to supply the deficient element to the plant directly, as by use of sprays. It is easy to see that minute amounts of impurities of micro-nutrient elements in commercial fertilizers may be without great significance for the nutrition of the plant. Naturally, however, the validity of this conclusion will depend on the kind of soil, the kind of crop, and the specific nutrient element deficiency.



The other side of the picture should not be overlooked. The micro-nutrients so essential to crop growth can be toxic to the crop when the amounts absorbed are excessive. Too heavy an

## ABOUT THE AUTHOR

Elements needed in minute amounts for plants, like vitamins for man, have sometimes been the subject of extravagant claims. Here is revealing information about boron, zinc, manganese, copper, and molybdenum—four of which are deficient in various fruit growing areas in California. This is a summary of a mimeographed circular by Prof. Hoagland and Mr. Scott.

application of such elements must be avoided.

In general, it is fundamental to any concept of plant nutrition to stress that green plants, at least those of chief agricultural importance, synthesize from carbon dioxide and water, with the aid of the energy of sunlight, all the organic substances used in their own growth or later utilized in animal nutrition. Obviously mineral elements are essential for the synthesis of these organic compounds by the plant, but just how the synthesis is influenced by any particular micro-nutrient element is largely in the realm of research. The micro-nutrient elements, like the vitamins, form a chapter of immense importance in our knowledge of plant and animal nutrition. Yet the fact that the knowledge of vitamins and micro-nutrient elements is comparatively recent and sometimes even dramatic should not lead to wide general claims unsupported by evidence. In each specialized problem in these fields of application of science, the wise course is to seek the knowledge possessed by an expert who is acquainted with the local conditions involved.

## Field Tests

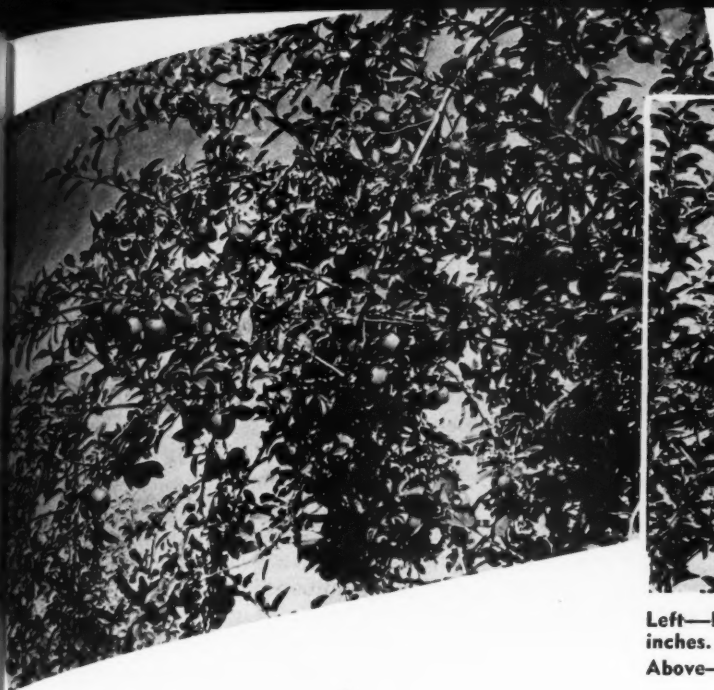
Experience with micro-nutrient problems in the field has largely been with deciduous fruits and nuts in northern and central California. Of the five micro-nutrient elements now generally recognized to be essential for plant growth, four are known to be deficient in various parts of the state. Molybdenum deficiency has not been recognized here in the field, but this element has not generally been included in our exploratory tests.

Although more than one deficiency often occurs in the same district, sometimes in the same tree, they usually

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AMERICAN FRUIT GROWER

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Left—Delicious apples, no thinning, yielded 48 percent measuring 2½ to 3 inches.

Above—Thinned with calyx spray, tree yielded 67.8 percent 2½ to 3 inches.

# HERE ARE THE FACTS ON BLOSSOM THINNING

By M. B. HOFFMAN, Cornell University

**T**HE IMPORTANCE of thinning apples is usually well-recognized by fruit growers; but hand thinning is laborious and expensive, and under present conditions it is difficult to obtain experienced and competent help for the job. Even when such help is available, hand thinning cannot be accomplished early enough to influence annual bearing. For these reasons, attempts are being made to develop safe and satisfactory methods of spray thinning. Some progress in this direction has been made. The Dinitros, or DN's, and an auxin preparation, App-L-Set, containing the sodium salt of naphthaleneacetic acid as its active ingredient, show promise as sprays for thinning apples.

## The DN's as Bloom Sprays

The DN's have given fairly consistent and satisfactory results with heavy-setting varieties such as Yellow Transparent, Wealthy, Baldwin, Golden Delicious, and Yellow Newtown, when the proper concentration of spray was applied at the right time. DN acts as a toxicant, and immediately upon contact it kills pollen that is shedding and pollen in unopened anthers. The petals, which are non-essential, are killed and soon dry up. From microscopic observations, it seems that this toxicant, in the concentrations used in orchard tests, does not penetrate or injure the style more than two or three millimeters below the stigmatic surface. This means

## About the Author

What can you do to decrease costs? Here are results of experiments pointing the way to reducing thinning costs through the use of blossom or post blossom sprays.

In his discussion of "auxin" sprays, Dr. Hoffman refers only to one commercial preparation because of the feeling that some of the different preparations vary enough in potency to necessitate use of different concentrations.

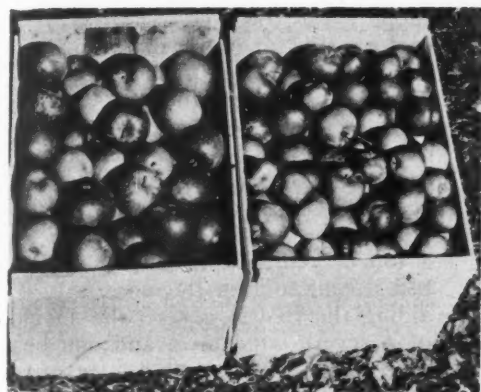
As Dr. Hoffman points out, blossom thinning sprays have been used successfully if applied properly. If contemplating their use, it would be wise to work closely with your state experiment station and start by experimenting with small numbers of trees.—Ed.

opening of these lateral flowers on the first day of full bloom, they can be destroyed. Thus, a thinning effect is produced by limiting the more vigorous spurs to the one fruit formed from the terminal flower.

This treatment is not adapted to such varieties as McIntosh, Cortland, N.W. Greening, R.I. Greening, Delicious, and Northern Spy in most orchards because of the difficulty of determining when sufficient cross-pollination has taken place. The flower parts of N.W. Greening seem to be extremely susceptible to penetration of the toxicant. In two New York orchards, where Delicious is planted row for row with a good pollenizer, this variety has been successfully thinned with a DN spray

(Continued on page 44)

that if pollen tube growth has proceeded one-third to one-half way down the style by the time the spray is applied, normal fertilization, seed formation, and fruit setting are likely to occur; therefore, a DN application must be timed rather accurately with a given stage of bloom development to reduce the number of fruits setting. With such varieties as Wealthy and Baldwin, the processes of fruit setting in most of the center terminal flowers of the spur (the first to open) are far enough advanced when the lateral flowers open that the treatment does not destroy the ability of these early flowers to set. When a DN application is timed to coincide with the



Baldwins thinned (left) yield 45.7 percent 3 inches and up. Unthinned, 4.9 percent 3 inches and up.

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APRIL, 1948





Typical root system of 8-year-old Grimes grown under a heavy mulch of straw.

# STRONG ROOTS MAKE STRONG TREES

By CLARENCE E. BAKER, *Purdue University*

IN THE MANY studies and experiments that have been conducted with apple trees during the past fifty years, the manner in which the root development has been influenced has been given very little consideration. We are inclined to take the root system of trees more or less for granted. As the roots are out of sight beneath the soil, we are likely to forget the important part they play in the development of the visible parts of the tree. This is an unfortunate attitude, as an extensive, well-developed and healthy root system is absolutely essential to a vigorous and productive tree.

An obvious purpose of the roots, of course, is that of anchorage and support for the tree. In order to perform this function, which in itself is a remarkable feat of engineering, it is necessary that the root system be sufficiently deep and uniformly distributed in all directions about the trunk to brace the tree properly against strains from any angle. Supporting the mature tree, with up to a ton or more of fruit, is no easy task. Add to this the necessity of aiding the tree to absorb the shock of a severe windstorm and one begins to realize the importance of a well-developed root system. Too frequently the roots are not capable of withstanding these extreme con-

ditions and the tree is literally uprooted by the storm. If the roots are properly developed, a weak or poorly formed top may be broken off without disturbing the well-anchored roots.

The structural anchorage of the tree, however, is only one of the functions of the root system. Equally important is the duty of absorbing moisture and mineral nutrients. The efficient performance of this function again demands a deep, extensive and well-distributed system of roots. The root hairs at the extreme tips of actively growing rootlets are the main moisture and nutrient absorbing organs. The more numerous these root hairs, the greater the possibility of moisture and plant food utilization. Hence, an intricately branched and rebranched root system, with the development of large masses of fibrous roots, is desirable. Trees with a shallow or poorly developed root system are at a disadvantage in dry periods, as the roots may quickly exhaust the available moisture from the volume of soil they are able to explore. A tree with a deeper or more extensive root system, however, may be able to survive the same period of dryness without difficulty, as the roots are in contact with a much larger volume of soil. Our present understanding

of the behavior of soil water assures us that capillary movement of moisture within the soil is too slow to satisfy the needs of trees. Therefore, it is now realized that tree roots can secure sufficient moisture for growth only from the mass of soil in close contact with the root area.

The same consideration applies to nutrient availability. If a certain mineral element is present in the soil in short supply, the amount of the element the tree is able to absorb depends upon how extensively and how thoroughly the roots are able to explore the soil.

Root studies, conducted in many fruit districts in New York, have shown the influence of soil type upon root distribution. Under similar soil management systems, apple trees in porous or friable soil, where moisture and nutritional conditions are favorable, make a much deeper and more extensive root development than trees on shallow soils, underlain with impervious strata or a high water table.

In some of the sandy soils of northern Indiana and Michigan, apple tree roots make very extensive growth both laterally and vertically. In mature orchards it is not uncommon to find lateral roots 50 feet or more long, growing in the upper 2 feet of soil and extending into the root systems of trees in other rows. This, of course, is an extreme condition and probably is limited largely to the sandy types of soils. Extreme depths of root growth in loess soil also have been reported. In general, however, apple tree roots are largely confined to the upper soil profiles. In many soil types, such as clays and loams, the major portion of the root system often is found in the upper 4 feet of soil. It is not unusual to find apple trees growing in soils where the roots are restricted primarily to the top 2 feet. In the more open types of soils large numbers of roots of considerable size may extend to depths of 8 to 12 feet and exhaust much of the soil moisture to similar depths during dry periods.

Soil management systems and fertilizer practices are known to influence root development, but the degree to which such influences are exerted is not always accurately understood. Several common misconceptions are prevalent among fruit growers concerning these relationships. During the past 25 years Purdue University Agricultural Experiment Station has conducted several series of root studies in different parts of the state to answer some of these controversies.

One point upon which there is considerable disagreement among

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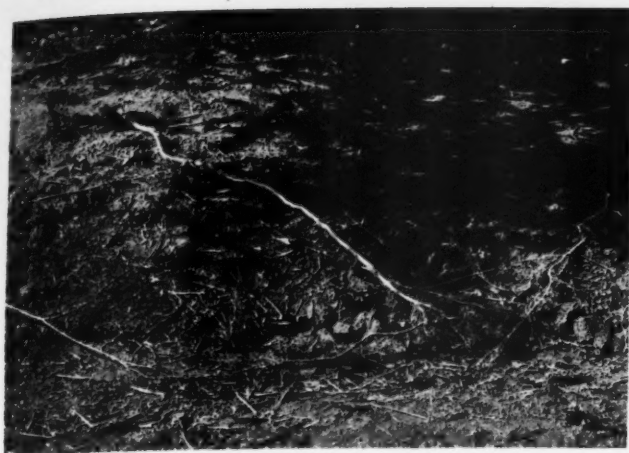
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Surface roots under mulch need not mean shallow root systems.



Typical root system of 8-year-old Grimes in cultivated soil.

apple growers is the effect of cultivation upon root development. One group argues that cultivation destroys the surface roots, thereby "stunting" the entire root system and greatly limiting the tree's ability to secure water and nutrients by the removal of many "feeding roots."

Another group argues that the destruction of the roots near the surface by cultivation causes the remaining roots to grow downward, resulting in a more deeply rooted tree with a larger root system than that of trees grown in sod.

Under the conditions of our studies there is little evidence to support either contention. The destruction of the roots that obviously occurs in cultivated orchards appears to have no far reaching adverse effect upon the trees. Under ordinary soil conditions there is a sufficiently abundant population of active roots beneath the depth of cultivation to insure the absorption of the necessary moisture and nutrients under ordinary conditions. Also, there is no indication that cultivation causes roots to grow deeper in comparison with trees in sod or other treatments. Furthermore, there is no indication of a stunting or a general decrease in the total size of the root system as a result of injury to surface roots by cultivation. As long as the cultivated area is moist, masses of tiny rootlets often grow from the cut root ends between cultivations and after cultivation is discontinued. These new root surfaces are probably efficient in absorbing moisture and nutrients.

An even more common misconception is that mulching, by causing a great increase in roots near the surface, causes trees to become shallow-rooted to the extent that they suffer greatly in dry periods.

Root studies in Ohio, Indiana, and elsewhere, indicate the fallacy of this idea. The reasons for its prevalence, however, are easy to understand. It is true that when an apple tree is mulched with straw, strawy manure,

sawdust and many other organic materials, and, to a certain extent, some inorganic materials as well, there is a great stimulation of the fibrous root growth near the surface of the soil. This increased root growth often occurs even upon the surface of the soil and up into the damp mulch also. During dry periods these roots may turn dark and die, or at least become inactive. It is probably this fact that serves as the foundation for the misconception.

Carefully conducted studies reveal, however, that these roots upon the surface which cause fruit growers such concern, are a very minor and transient portion of the whole root system. When they are active they serve a very important function of absorbing large quantities of water and nutrients, but when they become inactive during dry periods the tree continues to secure its necessary supply of food and moisture from deeper roots. Root studies have shown further that mulched trees do not become shallow rooted, compared with trees in other cultural treatments on the same soil type. In general, mulched trees have as deep, as extensive and as great a total root area lower in the soil as trees in sod or cultivated soil, but in addition they have this mass of small roots at the surface of the soil, which greatly increases the total root area.

A closer observation also will show that many of the small roots, growing up into the mulch, that appear dead during a prolonged dry period, become bright and active and send out profuse growths of root hairs soon after sufficient rainfall occurs to moisten the mulch.

The many instances of the increased ability of mulched trees to endure extended dry periods, in comparison with trees in sod alone or trees in cultivated soil, is further proof that mulching is not detrimental. The effectiveness of mulches in improving the moisture conditions of the

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Roots from 21-year-old apple trees under mulch (above) and sod (below). Squares, top to bottom, show soil levels as follows: 0-6 inches; 6-12 inches; 12-24 inches; 24-36 inches; and 36-42 inches. Squares, left to right show root sizes as follows: 0-1/4 inch; 1/4-1/2 inch; 1-2 inches; 2 inches up.



# ORCHARD WATER SUPPLY— FREE FOR THE DIGGING?

By DALE R. DUNBAR

**T**HE PROBLEM of obtaining an adequate supply of water for irrigation purposes is small to many fruit growers because of the presence of a lake or stream within a short distance of the orchard; however, many growers have orchards located far from any visible water supply, and they must seek the invisible, but abundant, supply that may lie underground. It is to this underground supply that this article is devoted.

Below the surface of the earth, at varying depths, we find water in quantities ranging from a very meager supply to an abundant one. This source can be tapped by installing a water well of suitable size and depth, with the proper size pump. Wells will vary in depth from 50 to more than 1,000 feet, and the cost will vary in direct proportion to the well's depth and size; however, when sufficient water is found, the benefits to the modern orchardist are far in excess of the cost.

There are several important advantages to be considered where it is possible to secure an adequate well water supply. First, the well can often be centrally located, requiring a minimum amount of distribution pipe. Second, the pump is always at a minimum distance from the crop to be irrigated. Third, these wells are, in many cases, used to furnish spray water without the need of a storage tank. Fourth, dry weather will not affect the well water supply.

There are several general types of ground formations from which water is obtained. First, there is a sand, or sand-gravel, formation. A well of this type is developed by installing the pipe down to the sand and gravel level, and placing a well screen of proper length, with openings of correct size. The well is then developed by working as much of the fine material out of the formation as it is advisable to do without harming the well.

A formation which will permit the use of a relatively coarse screen will require less screen to produce a given amount of water than one which requires a fine screen. A well is only as good as the screen because the screen is the heart of the well. It is very important that a good screen be used

## About the Author

As a man of long experience in the well drilling business, Dale R. Dunbar can speak with authority. He is a partner in the Dunbar Drilling and Supply Co. which, headed by his father, has been operating for almost a quarter of a century. With a background in geology and the combined experience of the Dunbar company behind him, he gives some pointers about orchard water supply that are well worth noting.

when installing a well in a sand and gravel formation. A screen of Silicon Red Brass, or Everdur metal, represents the best investment because it is most efficient in transmitting water from the formation into the well, and it also represents a permanent installation. Screens made by perforating pipe are far less efficient and in many cases will last only a few years before corroding or becoming encrusted, thus requiring replacement. Capacities obtained from wells developed in sand and gravel formations range from a few gallons to several thousand gallons per minute.

Many wells are completed in limestone rock formations. These wells vary from fewer than 100 feet to more than 600 feet in depth. When a well of this type is installed, the well casing is placed down to the rock. An open hole is then drilled through the limestone rock until sufficient water is obtained. In the event that a well does not produce the desired amount of water after drilling through the entire depth of the limestone rock, it is possible in most instances to greatly increase the capacity of the well by shooting it with dynamite. Very good results can also be obtained by treating this type of well with hydrochloric acid which is prepared for this purpose. Limestone rock wells vary in capacity from a few gallons per minute to large yields; but generally speaking, they will produce less water than sand and gravel wells.

The next, and last, type of water wells to be considered are those completed in sandstone rock formations. These wells are constructed exactly as limestone rock wells, with the ex-

ception that occasionally the sandstone rock is so soft that it is necessary to install a screen such as is used in wells finished in sand. There are a number of different sandstone rock formations located at different levels. These wells, on an average, are the deepest of all types. Sandstone rock wells, in most instances, may also be developed to much larger capacities by shooting with dynamite; but acidizing has not been successful. After a well of this type has been shot, much work is required to remove all of the broken and pulverized sandstone. The capacities of sandstone rock wells compare very favorably with those of sand and gravel wells.

Wells of large capacities are most desirable where irrigation of a large acreage is necessary. When it is impossible to obtain the capacity desired from a well, you may have to run the pump longer to accomplish the desired results. If one well is not sufficient, with continuous operation, another can be drilled, and the two can be operated at the same time. Most water wells are capable of continuous operation regardless of capacity, especially for irrigation which is only seasonal. A well with a capacity of 500 gallons per minute will produce 30,000 gallons per hour. This is equivalent to 1 inch of rainfall on one acre. Ten hours of operation will provide 1 inch of rainfall on 10 acres. If a well will produce only 250 gallons per minute, it will require two hours to provide the equivalent of 1 inch of rainfall on one acre. The fuel cost for pumping a given amount of water will be approximately the same in either case because the smaller pump for the smaller capacity requires proportionally less horsepower to operate.

In many sections of the country it is almost certain that wells of adequate capacities can be obtained, while in other localities there is some question as to the final results. In some communities it is known that water wells of ample capacities cannot be developed.

The first step for a grower who desires to secure a water supply from a well is to locate an experienced and

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# CO-OPERATION DOES IT!

## A Grower-Owned Co-op Takes the Guesswork Out of Citrus Production

By ELDON S. BANTA

ONE OF Florida's finest citrus co-operatives is the Haines City Citrus Growers Association. In the 1946-47 season its grower-members netted a return of \$500 to \$1,000 per acre.

Organized in 1909 with J. W. Sample as its first president, the Association has grown from six members with 150 acres to 135 members and 3,500 acres of oranges, grapefruit, and tangerines. More than a million and a quarter boxes of citrus are produced by this co-operative each year. Approximately 625,000 boxes, roughly 50 percent, go into the fresh market; the remainder goes to juice processors. Total production has gained from year to year, as groves have matured

members' citrus crop; but it also takes over the complete operation of the members' groves. This includes all phases of growing, harvesting, packing, and selling. The grower is thus freed from any responsibility in the operation of his grove. At the end of the season he receives the net income from the sale of his crop. That is about the total of his worries.

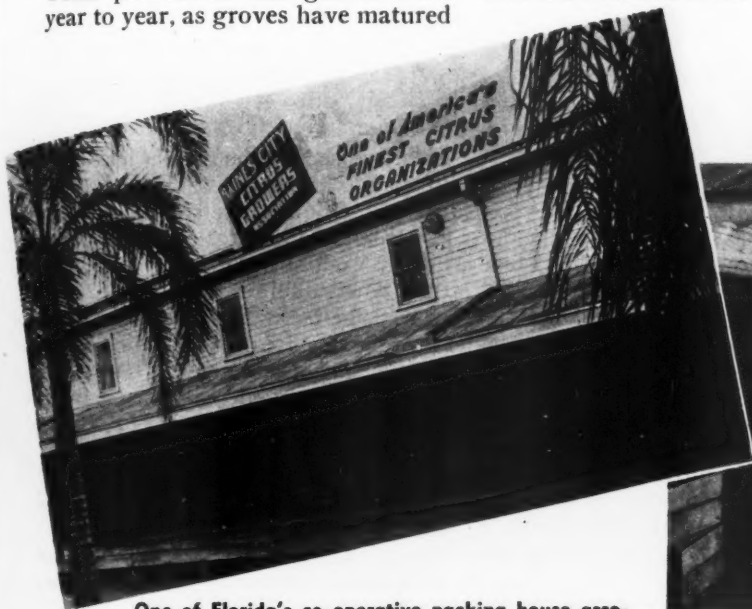
Groves in the Haines City Association vary in size, mostly from 5 to 40 acres each. With these small acreages, it is uneconomical for a grower to attempt his own grove operations and packing house. Consequently, the establishment of co-operative associations has ameliorated the situation to the advantage of

tered in a radius of 25 miles around the packing house. He pulled out large, thick books that told the story. They were the records of each grove, and he could tell within a minute the cultural treatment that any given grove was receiving. They showed, for instance, the amount of fertilizer applied, the day applied, and the analysis of the fertilizer in any certain grove.

Enormous quantities of chemical fertilizer are required to grow a crop of citrus on the sandy Florida soils. To meet these requirements, the Haines City Citrus Growers Association in 1935 built its own fertilizer mixing plant. Here some 5,500 tons of fertilizer are mixed annually at the rate of 10 tons per hour. The plant is in operation for 18 weeks during the active seasons. The entire output is used on the Association's groves.

Citrus trees have three normal periods of active growth, and fertilizer applications correspond with these. Spring applications are made in late January or early February, summer applications in late May or early June, and fall treatments in October or early November.

Roughly speaking, fertilizer mixtures are generally composed as follows: nitrogen, 3-4%; phosphate, 6-8%; potash, 6-8%; magnesium, 2-3%; manganese, 1%; copper, 1/2-1%. Zinc, another essential element in Florida, is generally applied to the trees as a foliage spray. It is



One of Florida's co-operative packing house associations, operating some 3400 acres of citrus fruits.



Unloading oranges and grapefruit at the packing house of the Lake Wales Citrus Growers Association.

and cultural methods have improved.

What is a co-operative citrus growers' association? As its name implies, it is a true co-operative. Its membership includes exclusively the growers and the grove owners. They, in turn, own the association. All money received from the sale of fruit, over and above the cost of operation, is paid back to the members in the form of annual rebates.

The primary function of the citrus growers' association is to market its

both the grower and consumer.

Not all Florida growers are members of co-operatives. Some are large enough to operate their own groves and packing houses. Others operate their own groves and then sell their crops to commercial packing houses at harvest time.

Haines City's grove manager, H. A. Thullbery, took me into his office when I asked how he kept operations under control in all the groves scat-

generally considered that 2 pounds of fertilizer is required in each of the three applications to produce a box of fruit. Thus, a tree yielding 10 boxes of fruit would need 60 pounds of fertilizer during the growing season. Trees and groves vary considerably in their requirements.

About mid-May the groves are permitted to grow up with native grasses and weeds, and no cultiva-

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## NATIONWIDE FRUITS



### PEARS

● **Out in Washington** the job of battling the pear psylla has been turned over to the growers. Since 1939 when the disease spread from the eastern states to the West, the government has had a program to rid the area of this pest. The disease continued to spread, however, partly from British Columbia because Canada did not inaugurate a control program, and the cost of control became too great for the United States government.

The Bureau of Entomology and Plant Quarantine has studied these various developments and has concluded that little would be gained by continuing the Federal spray program after this year.

In the meantime the pear psylla has decreased in numbers in New York State. According to F. G. Munding of the Experiment Station at Geneva this may be due to parasites, weather conditions, or other natural factors. He suggests that spraying with a 3 percent oil spray before any green tissues show in the spring will protect the trees during most of the summer. Also effective against the pest are DN compounds which can be applied even later.

● **A new type** of pear with a cranberry red color has been developed by a western grower, Art MacKelvie. Called the Max-Red Bartlett, its sugar content is 10 percent higher than that of the Bartlett and the neck is thicker giving it added weight. This pear resulted from the grafting of a red-striped pear into a blighted French seedling tree. In another three years there will be enough trees of this variety to put the fruit on the market.

### BERRIES

● **In many plantings** inspected by plant disease men, it was found that anthracnose caused losses, directly or indirectly, of 10 to 50 percent of the crop of black raspberries in New York last year, according to Alvin J. Braun of the Geneva Experiment Station. The disease is generally found on the cane, and greenish-brown lesions usually appear on the base of the young shoots when they are 10 to 12 inches high.

Proper cultural practices are extremely important in control of

anthracnose, and the grower may have to change his methods. However, 10 gallons of liquid lime-sulfur added to 90 gallons of water, applied thoroughly each spring, should give control where cultural practices have proved ineffective. The effect of this spray will be greatest if applied at the time when the majority of second or third leaves are opening on the fruiting canes.

When buying plants, only disease-free stock should be purchased, and the rooted tips should be dug and planted while they are completely dormant. Clean cultivation is a method recommended for keeping the plants healthy during the months of April through July.

● **The Georgia** Agricultural Experiment Station advises growers who wish to plant blackberries and dewberries to obtain well-established varieties from a reliable source. Blackberry varieties which have been tested at the Georgia Station and found to be the best growers, and the most fruitful, for that section, are Lawton, Crandalls Early, Dewblack, and Eldorado. The first two, with their vigorous growth and large berries, are the most outstanding varieties.

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Large, reddish-purple dewberries are produced by the Youngberry variety, which ripens the earliest, Boysenberry, and Rossberry, while the Lucretia produces darker colored fruit, medium to large in size; these are the best of the dewberry varieties for planting in Georgia.

## PEACHES

● **The phony peach disease** may not kill trees, but it may cause the yield of marketable fruit to be decreased. This disease is caused by a virus in the roots and is characterized by abnormally green, healthy-looking foliage accompanied by a bushy appearance of the tree due to short twig growth.

The disease has destroyed a number of orchards in the East but still has not become widespread in Arkansas. In spite of this, however, an annual inspection is made in Arkansas to discover the disease, and all diseased trees are removed. The Bureau of Entomology and Plant Quarantine is in charge of this work.

● **It has been found** that, with proper timing, DDT is effective against two pests which attack peach trees—the peach tree borer and Oriental fruit moth. The Ohio Experiment Station used two applications of a spray made up of 2 pounds of 50 percent wettable powder in 100 gallons of water for control of the Oriental fruit moth. In one county 97 percent clean fruit was the result, while in another 96 percent was attained. The first application was made against second-brood larvae and the next against third-brood larvae. Geographical location and seasonal development will determine the timing of the sprays.

The same spray solution is applied in a trunk spray for the control of peach tree borer at the New York Agricultural Experiment Station. The most successful control has been attained by the use of three sprays at three-week intervals. In ten test trees where no treatments were made, 90 borers were found; in ten trees which had been sprayed, only 3 borers were found.

## CITRUS

● **Long ago** orange growers were advised to plant their trees reasonably far apart to produce better-colored fruit. After many years of research, this advice is still good according to citrus fruit experts from the U. S. Department of Agriculture. But, in the meantime, new reasons have been added for well-spaced trees. Color, quality of juice, and vitamin C content will all be improved if the trees are

“well-sunned.” Because of these new factors, fruit used for canning, even though the color of the skin is not important, should also be grown on well-spaced trees to insure the best quality of juice and the highest vitamin content.

● **“Every part** of the fruit but its color” is now being used in citrus by-products in Florida. Citrus seeds will be processed separately from the rest of the pulp left over in canning juice to yield an oil that can be refined and used interchangeably with cottonseed and peanut oil in the manufacture of vegetable shortenings, mayonnaise, and salad or frying oils. The meal and hulls of the seeds are used for cattle feed and as a conditioning material in fertilizer. Such a separation brings a much higher price per ton than when the seeds were formerly included in pulp marketed for cattle feed.

## APPLES

● **Because** the Golden Delicious apple is so popular with Tennessee growers—its production in Tennessee has become greater than any other variety—trial plantings have been made through the state to establish some “kindred” varieties according to W. C. McDaniels of the Tennessee Horticultural Society. A late variety called Red Gold was introduced last season and is now being planted, on trial, in several Tennessee orchards. Elmo Adams, a member of the horticultural society, has originated an early golden skinned variety just after Lodi in season. About 8 years ago Adams set out some Golden Delicious seedlings and was surprised to find they fruited in their third year from seed. Every year since, the trees have produced big, yellow apples in early-to mid-July. The propagation rights to this disease-resistant, good quality apple have been purchased by a Tennessee nursery, and the trees will be available in a year or two.

● **The search is on** for the cause of apple measles. This disease, appearing in pocklike areas on the outer bark, prevents the growth of trees and often kills them. At one time the addition of boron to the soil was thought to decrease the severity of the disease, but orchard tests in various states have indicated that it is of doubtful value.

The West Virginia Agricultural Experiment Station reported that experiments there had uncovered the fact that the disease might be due to an oversupply of available manganese in the soil. With this thought in mind the Ohio Station set up experiments using the Red Delicious variety, which

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**H**OWDY, Neighbor. Just come in from the orchard, and the air smells so good yuh just about bust your buttons takin' it all in. Tried to do a little work out there, but my woolies got to itchin', 'n' my bones kind of achin' in a lazy sort of way, so I just thought I'd come in and rest a spell.

Say, I heard tell of a funny thing up New York way. You know that there Broadway, where all the lights and show folks is? Well that street's got a crook in it because of a cherry tree. Yup! When the city was hardly big enough to fit its britches, some stubborn old Dutchman name of Hendrick Brevoort wouldn't let 'em cut down his cherry tree to make a road. So now there's a bend—right where the Grace Church is now.

Read some place, don't remember where, that out in Wenatchee, Washington, they're so proud of their bein' the “Apple Capital of the World” that their city bus tokens are made like little apples. There wuz a big fuss for awhile about that “Apple Capital” stuff, I guess. Yakima got its dander up about it—claimed Yakima wuz the “Capital.” Don't know how it did come out. Guess it don't much matter, so long as they both keep on growin' them wonderful apples!

Down Florida way they got a real good idea—hope they hang onto it. Some fella, Charles Irrgang, owner of 300 acres of citrus groves, says all the growers should set up a single marketing agency so's they could control the quality of the fruit goin' to market, and keep better hold on prices. 'Bout time they're doin' somethin' like that!

Heard the other day that the United Merchandising Institute of Kansas City, Mo., is doin' a bang up job boostin' the sale of fresh fruits 'n' vegetables in retail stores. They say that after the new-fangled ways of sellin' were tried, sales of fresh stuff went up 33 per cent in a store in Charlotte, N. C., in four days without any change in prices. By cracky, that UMI, as they call it, might be worth lookin' into!

Well, seems like I'd better quit all this chinnin' and do some thinkin' for a spell. So long for now!



# STATE NEWS

- Iowa Attacks the Marketing Problem
- New Hort. Society Planned in South Carolina

**COLORADO, March 5**—A. C. Ferguson will take charge of plant breeding work in the horticultural field for the horticulture section of the Colorado A and M College Experiment Station, effective April 1, 1948.

Ferguson's appointment has been approved by the State Board of Agriculture, the College governing body. For the last two years he has been working as a plant breeder for a seed company which is operating on both the eastern and western slopes of Colorado. At present he is doing graduate study, working toward a Ph. D. degree at the University of Minnesota.—*Colo. A and M Exp. Station, Fort Collins.*

**FLORIDA, March 15**—Test plantings are being made on Florida's West Coast to see if that area is suitable for growing tropical and sub-tropical fruits. The University of Florida's sub-tropical experiment station at Homestead will direct the work which will determine whether or not the acid, sandy soils in this region will produce good fruit trees.

Many different kinds of seedlings will be distributed, and the Homestead station will supervise the plantings according to Dr. George D. Ruehle, vice director. Tree growth records will be kept by the planters.

**GEORGIA, March 18**—Elberta peaches were in full bloom in the middle Georgia area on March 14. A low temperature of 27½° F on March 13 did not injure the blossoms. The bloom is not heavy this year, but apparently it is sufficient to set nearly a full crop.

Growers have been using lime sulfur in the pink stage for the control of brown rot. Plum curculio are emerging in the Fort Valley area, but at this date emergence has not begun in the middle Georgia peach section.—*E. F. Savage, Ga. Exp. Station, Experiment.*

**IOWA, March 6**—The problem of the marketing of fruit has been introduced to the Iowa Fruit Growers' Association by its president, Wheelock Wilson. He proposes that the Association might do some work on it beginning this season.

Wilson says, "I have thought a lot about various problems of the average fruit grower here in Iowa, and it seems to me that the marketing of the crop of the small grower—the one who depends on a local market as I do—is a phase of our business which is not at all being handled to the best advantage of the grower. Marketing is the biggest headache for the grower with one-half acre to 20 acres of fruit, and because he knows the least about this phase of fruit growing, he probably gives it the least serious consideration and maybe largely trusts to luck to get a good price."—*W. M. Collins, Sec'y-Treas., Iowa Fruit Growers' Assoc., Des Moines.*

**MARYLAND, March 19**—The Maryland State Apple Commission is now organized and is running smoothly. This Commission, composed of apple growers, was appointed by the Governor to administer the funds collected through the Maryland Apple Mer-

chandising Act. By this Act a grower tax of one cent per bushel was levied on the sale of any apples of U.S. No. 1 Canner grade or better. These funds are to be used in apple sales promotion. Each grower has an exemption of 500 bushels of apples, so the smaller growers are not affected by the tax. Recently, Harold K. Smith was appointed as secretary of the Commission, replacing A. F. Vierheller, who was selected as temporary secretary and who set up the machinery for the Commission but could not continue with the additional work. Other members of the Commission are: J. P. Caspar, Chairman; D. E. Rinehart; E. D. McCain; J. G. Harrison; M. T. Heaps; E. W. Scott; and W. L. Allen.

The Executive Committee of the State Horticultural Society has selected Miss Alice Elizabeth McCain of Frederick to represent the Society as a Princess in the court of Queen Shenandoah, at the Apple Blossom Festival in Winchester, Va.

The new president of the Maryland State Horticultural Society is Marshall T. Heaps of Cardiff, Md., and John P. Caspar and R. Sam Dillon, Jr., both of Hancock, will round out a strong leadership for the Society as vice-presidents.

There is an adage that you should never count your chickens until after they have crossed the road. Maybe it's too soon to predict results, but the past winter has done heavy damage to the large commercial raspberry plantings in the Western Maryland area.—*A. F. Vierheller, Sec'y, Maryland State Hort. Soc., College Park.*

**MICHIGAN, March 13**—Continued cold weather during the winter of 1947-48 has probably been responsible for the small amount of pruning which has been done in Michigan orchards this year. Low temperatures have caused considerable injury to peach buds in various locations, but the amount of the damage cannot be accurately determined until the buds start to swell in early spring. A very spotted condition in regard to injury to peach buds prevails.

The apple market has continued dull. The Michigan apple crop was late in ripening last fall, and apples were priced too high to be used abundantly in the markets. About the only outlet has been through grocery stores. There have been few apples distributed to consumers by either truckers or hucksters.

Most growers feel that the high mark-ups in the distributing channels of trade have been partly responsible for the slow apple movement.—*H. D. Hootman, Sec'y, Mich. State Hort. Soc., East Lansing.*

**MONTANA, March 12**—Small fruit growers in the Bitter Root Valley at Hamilton, Montana, have formed a Berry Growers Association, and the one principal thing they are working for this year is the certification and growing of strawberry and raspberry plants. This certification work will be under the supervision of the Montana State Agricultural College. They expect to have about 50 acres under certification this year, and some of the principal varieties will be the Dorset, Senator Dunlap, and Gem.

Ralph Erickson of Corvallis was elected president for this year.

Sweet cherry growers in the Flathead District shipped 78 carloads of cherries last year, and the prospects look very promising for a larger and better crop this year. They expect to ship at least 50 more cars than they did last year. The sweet cherries from this district are widely known for their flavor and high quality and are shipped all over the United States.—*R. O. Young, Chief Inspector, Mont. Dept. of Agr., Missoula.*

**OHIO, March 15**—A clinic to study the problems of marketing fresh fruit and vegetables was held in Columbus, March 10-11.

Sponsoring the clinic were several grower and distributor organizations. A frank exchange of viewpoints of the representatives of the several groups in attendance served to clear the atmosphere. The conference should be the means of a constructive approach to the problems of another year. The conference was prompted because of a very unsatisfactory market for fruits and some vegetables during the winter months. Better standardization of grades and packages were emphasized as basic requirements.

The eastern half of Ohio is getting set for an invasion of the 17-year locusts this summer. In the orchards where the trees have been regularly pruned annually, lighter pruning is suggested for this year. This will be the first time Ohio entomologists have had an opportunity to try out some of the newer insecticides.—*C. W. Ellenwood, Sec'y, Ohio State Hort. Soc., Columbus.*

**OREGON**—A direct comparison of dwarf, semi-dwarf, and standard-sized apple trees of the same varieties will be made on the horticultural farm of the Oregon State College experiment station where three acres have been planted to the three types of trees. These plantings include six of the leading commercial varieties—Starking Delicious, Golden Delicious, Jonathan, Rome Beauty, Gravenstein, and Yellow Newtown—reports Henry Hartman, head of the horticulture department. Project work is directed by A. N. Roberts, assistant horticulturist.

Dwarf and semi-dwarf trees have certain advantages over the standard-sized trees and may be suitable for introduction in Oregon if their productive and longevity qualities are comparable, Roberts points out. They have been used in the concentrated farming districts of Europe for decades and have been tried with varying results in eastern states during the past 10 years.

The most dwarfed trees are especially suitable for small back yard planting since they only grow about 6 to 8 feet high and come into production in their second or third year. Semi-dwarf trees may be forced into production in their fourth year while it usually takes from 5 to 8 years with the standard-sized tree. They require less pruning than the bigger trees, are easier to spray and harvest, and may be planted at 18-foot intervals as compared to 36 for the standard tree.

Additional trial plantings of trees will be made in coming months by the Hood River branch experiment station and by co-operating growers in Marion County. Working with Roberts on the project are C. A. Boller, Jr., research assistant in horticulture; Leroy Childs, superintendent of the Hood River branch station; and Don Rasmussen, assistant county agent in Marion County.—*Sam H. Bailey, Ore. State Coll. Exp. Station, Corvallis.*

**MASSACHUSETTS, March 18**—After a lapse of several years, Nashoba Fruit Producers' Association is making plans to renew the annual Apple Blossom Festival. (Continued on page 38)



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Growers  
stages

Black  
Leaf

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### BLACK LEAF 40—

— does double duty — kills by contact — kills by fumes. It controls: —

Aphids • Leafhoppers • Pear Psylla • Leaf-miners • Most Thrips • Bud Moth and Larvae • Four Lined Leaf Bug • Apple Red Bug • Pear Midge • Pecan Nut Casebearer • Pecan Phylloxera • Mealy Bug • Codling Moth and Larvae • Strawberry Leaf Roller

### BLACK LEAF 155—

— is the fixed nicotine product for control of codling moth, grape berry moth, leafhoppers, citrus thrips and similar pests. It dries and sticks through driving rains.

**No. 1:** Black Leaf sprays kill plant lice and certain other insect pests without destroying beneficial insects such as those that hold mites in check.

**No. 2:** Harmless to foliage — permitting development of color and size.

**No. 3:** Black Leaf sprays maintain high quality, taste and appearance of fruit.

**No. 4:** They are compatible with other standard sprays, saving time and money in combination applications.

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**Down Through the Years** Black Leaf products have proved their worth as contact sprays and for other specific purposes. More and more growers are finding them essential to profitable food production.



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**Arsenate of Lead**

**Micronized\* Sulfur  
Wettable and Dusting**

**50-50-W  
(Micronized wettable  
powder containing  
50% DDT)**

**3% DDT DUST  
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**PITTSBURGH  
PLATE GLASS COMPANY**

\*Trade Mark Reg. by The Micronizer Company,  
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## HAVE YOU TRIED A CHERIMOYA?

By R. L. LEE

"THE FINEST FRUIT in the world," say leading horticulturists of the exotic, subtropical cherimoya, which now promises to become widely known in the United States through the propagation of a new and superior variety by William H. Ott of Whittier, Calif. Ott's experience shows that the cherimoya tree requires about the same climate as an orange or lemon tree. If you live where these familiar citrus fruits grow, you could easily have a cherimoya in your backyard.

To most people in this country who know anything about the cherimoya, it is a strange, outlandish fruit confined to such equatorial regions as Mexico or South America. Ott has put it on the Los Angeles markets and the dining tables of his California neighbors, and if present plans for its cultivation are carried out, it will doubtless take its place, in a few years, beside the avocado as one of the most familiar and delightful contributions of the tropics to northern subtropical orchards.

Ott first tried out his discovery on his wife and friends. They liked it, and he has never since found anyone who did not think it delicious. Already orders have come in from San Francisco to Long Island, and he feels that the demand will be large as soon as the public becomes better acquainted with the new variety.

The cherimoya is both rich and delicate. The sugar content is high—26.5 percent, and the percentage of protein is higher than in most fruits; thus, it is a substantial food as well as a delicious dessert.

Shaped something like a huge strawberry, the new fruit weighs from 10 ounces to 1½ pounds. This is smaller than many varieties and is more convenient for shipping. Small bumps appear on the otherwise smooth skin. These are characteristic of all cherimoyas, but in the Ott specimen, they are not large enough to bruise easily. The pale green skin turns faintly yellowish when the fruit is ripe. The white pulp contains brown, bean-like seeds and becomes soft when ready to eat.

After being divided, unpeeled, into its natural sections, it is best eaten with a spoon. Served like chilled cantaloupe, Ott's cherimoya makes an enticing breakfast food. It has been called a one-piece salad, for it has a rare ambrosial flavor, a combination of strawberry, pineapple, banana, and sweet, ripe apple. It has a hardier skin

than other varieties, it is self-pollinating, and it is a more prolific producer than others. Most other cherimoya varieties lose their finest flavor after the first few weeks of bearing, but the fruit of this one is good during the whole season, which extends from January to May.

Originating in the mountains of Ecuador and Peru, the cherimoya has been naturalized in many parts of Mexico and Central America, but throughout this region it grows best at an elevation of from 3,000 to 6,000 feet. Thus, although a native of tropi-



*Courtesy of Bureau of Plant Industry, USDA.*

**Each of these cherimoyas weighs 2 to 3 pounds.**

cal countries, it requires the cool air of the mountains for its successful culture.

The name, cherimoya, is of Peruvian Indian origin and means "cold seeds." Terra-cotta vases modeled like cherimoya fruits have been dug up repeatedly from prehistoric graves in Peru.

The foothills of southern California and the frostless coast regions of Texas are believed to furnish ideal conditions for growing cherimoyas on a commercial scale. By petting it along, a tree can be made to flourish in colder and higher regions. It endures cold about the same as a lemon tree, Ott says, and it might be grown under glass in really cold countries.

Budded cherimoya trees should be planted from 20 to 30 feet apart in an orchard, and seedlings should be spaced about 30 feet apart, because they grow larger. A few pounds of fruit would give a start with seedlings. Irrigation followed by a thorough cultivation of the soil should be practiced at intervals of from two weeks to a month. For shipping, the fruit is picked when mature but still firm, and it needs to soften for a week or ten days before it is ready to eat. The Ott cherimoya will bear shipping by train to any North American market. It will doubtless become cheaper when more extensively cultivated.

**AMERICAN FRUIT GROWER**



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## "OUR D2 CAN DO TWICE THE WORK AND SAVE \$300.00 A YEAR ON FUEL"

... Lewis R. Gray,  
Traverse City, Michigan

Lewis R. Gray and his father, E. P. Gray, operate 230 acres near Traverse City, Michigan—60 in cherries, apples, peaches and pears; 70 in timber; 100 in general farm crops. In 1947, the Grays bought a used "Caterpillar" Diesel D2 Tractor with 5300 hours on its meter—needing extra power to pull a 400-gallon speed-type sprayer and wanting Diesel economy.

"The D2 gives us traction and power in sandy, hilly orchard to spray about 2½ acres per hour," reports Lewis R. Gray. "Last season, operating 900 hours, it saved us \$300.00 on fuel expense compared to the gasoline tractor replaced. In comparison, it can do nearly twice the work of the other one.

"The D2's positive traction, sturdy dependability and easy handling allows us to use it for log-skidding and stump-pulling as well as for general farm work and orchard care: Though it had done heavy work for several years before we got it, and now has 6,254 hours on its



meter, the D2 should operate dependably at least 5 more years, I figure."

You can take positive all-soil, all-weather traction for granted—in a "Caterpillar" Diesel Tractor. That means power to do your orchard work, heavy or light, on time. Besides that, fruit-growers commonly save 60% to 80% on fuel expense—compared to the spark-ignition power replaced... And "Caterpillar" Diesel Tractors that have done what equals 20 years, and more, of heavy orchard work, are still going strong!

CATERPILLAR TRACTOR CO., PEORIA, ILL.

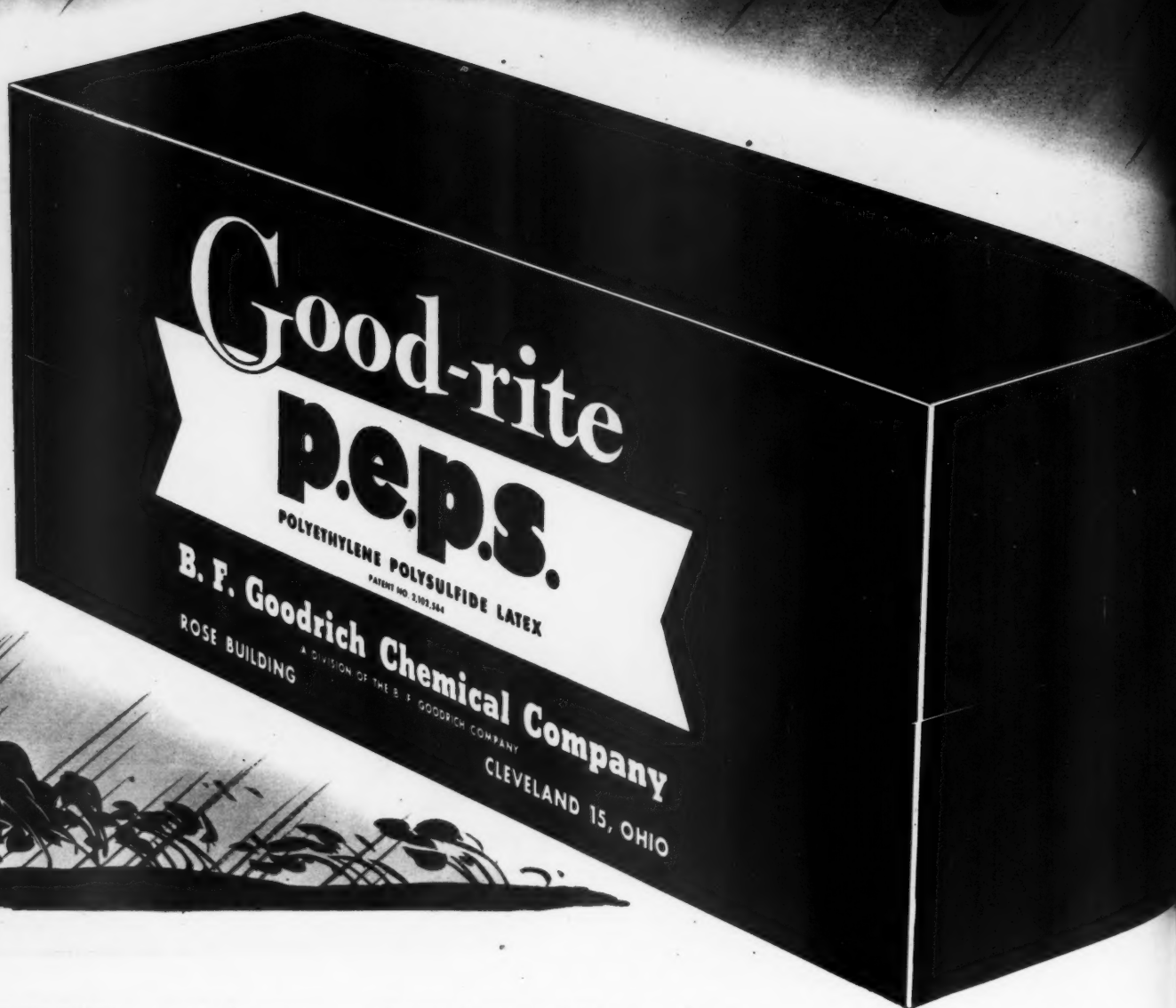
# CATERPILLAR DIESEL

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ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

APRIL, 1948

31

# Here comes the foggit



**G**OOD-RITE p.e.p.s. is the versatile new agricultural spray chemical that growers have wanted but haven't been able to get in a single material. It's basically polyethylene polysulfide. But now this polymer is based on a brand new process which permits the preparation of non-phytotoxic aqueous dispersions of fine particles with remarkable stability. It is a typical development of B. F. Goodrich Chemical Company to make growing surer, costs lower and results better.

Comprehensive field tests show that spray deposits which include Good-rite p.e.p.s. as the sticker stand up against heavy rains. P.e.p.s. will not wash off. This means better and longer-lasting dosages and, in some instances, reduces the number of spray applications. In other words, less work, less cost and surer good crops for you. Send for sample (at the special introductory price) and/or for free literature describing this new chemical in full.

## EASY TO USE!

Each four-pound package of p.e.p.s. contains two heavy foil-wrapped cartridges. Simply break open the cartridge, dump on the screen and wash in with water. Each cartridge makes 400 gallons.



# B. F. Goodrich Chemical Company

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# "ticker" that sheds rain!

## Good-rite p.e.p.s.

the new fungicidal adhesive is

### HIGHLY ADHESIVE

resistant even to heavy rainfall that washes off ordinary sprays.

### WIDELY COMPATIBLE

with oils, arsenicals, D.D.T., nicotine, chlorinated hydro-carbons, sulfur, organic sulfurs and many other agricultural chemicals.

Highly active fungicidal or insecticidal chemicals lacking adhesiveness, are made satisfactory for spraying by the addition of p.e.p.s. as a spray adjuvant.

### FUNGICIDAL

Performance at higher dosages equal to that obtained with dry wettable sulfurs. For some diseases, such as black spot and mildew of roses, it provides control superior to sulfur.

### NON-INJURIOUS

to fruits and leaves. Tests show it to be safe on a large number of crops, including some sulfur-sensitive crops.

### RESISTANT TO

heat and cold. Not harmed by exposure to freezing and thawing temperatures. Not volatile at field temperatures. Not depleted by heat.

### ALLOWS REDUCED DOSAGES

Reduction of dosage by one-third to one-half possible in many applications. Highly desirable for control of many diseases in plantings where frequent sprays cannot be applied.

## TRIAL OFFER

TO AMERICAN  
FRUIT GROWER'S READERS

It is intended that p.e.p.s. reach you through established distributors and dealers. However, if you'd like to try it out this season, use the special introductory offer in the coupon at right. Or, simply send for additional information.



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Rose Building, Cleveland 15, Ohio

Gentlemen:

Please send me your comprehensive bulletin on p.e.p.s. If I check in the space provided please send me 4 lbs. (enough for 800 gallons) of p.e.p.s. at the special introductory price of \$3.50 post paid. I am enclosing .....

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☐ Send me your special introductory offer.

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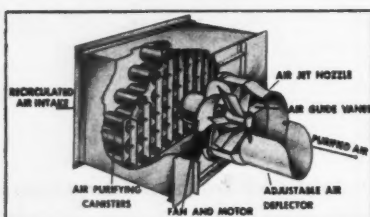
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STORE APPLES FOUR TO  
SIX WEEKS LONGER

# DOREX ACTIVATED CARBON APPLE STORAGE UNITS

- Extend storage life
- Reduce scald
- Protect flavor

Cornell University Agricultural Experiment Station tested Dorex activated carbon air purification equipment in the laboratory and in commercial apple storages for over three years. Results proved that fruit could be kept firm and flavorful four to six weeks longer. Dorex activated carbon units soak up the ethylene gas which quickens ripening, the gases which cause scald, and the "off" odors from packing materials and stored produce that impair taste and flavor. Another advantage is that Dorex units permit access to the storage space at all times for continual storing and removal of fruit.



Dorex self-contained units are designed to meet the requirements and specifications determined by the Cornell research. Portable and adjustable to storage conditions, they may be floor-mounted or suspended from wall or ceiling.

## LOW IN COST—EASY TO INSTALL

The average initial Dorex unit cost is 6¢ per bushel (based on storage capacity). Increased profits from a longer marketing season and better quality fruit in the first year alone can often exceed the original investment. Yearly maintenance is about 1/2¢ per bushel.

Dorex units are shipped complete, ready to install. There are no extra parts to buy, no expensive ducts to erect. Operation is entirely automatic and independent of refrigeration equipment. Little space is needed and practically no attention required. Capacities range up to 20,000 bushels, and units, either singly or in multiple, can be adapted to any size storage or layout.

For complete information, and the name of the dealer nearest you, write, giving your storage room capacities, to:

## W. B. CONNOR ENGINEERING CORP.

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## MICRO-NUTRIENT ELEMENTS

(Continued from page 20)

can be diagnosed accurately from leaf, bark or fruit symptoms. However, it is often very desirable to have a simple test to confirm a diagnosis or to explore for a deficiency in suspected cases. A number of testing methods have been devised but the use of limb injections with dry salts of these elements has proved to be very dependable for deciduous fruit trees. By making such tests in single limbs the balance of the tree is available for comparison. If more than one element is to be tested, the others can often be placed in the same tree. This method seldom fails in deciduous trees if used properly. It is essential to have the chemical in contact with sapwood and not in the heartwood only. When branches 3 or 4 inches in diameter are available for the test, one 7/16 inch hole, deep enough to accommodate the chemical, is sufficient. The hole should be a foot or more above the base of the branch to prevent the chemical from reaching an adjoining branch. In larger branches or trunks the holes are spaced about 3 1/2 inches apart on the circumference to insure distribution of the chemical. About 1 1/2 grams of borax or the sulfates of copper, manganese, and zinc are placed in the holes. A piece of 3/8 inch thin wall brass tubing fitted with a plunger with a 1 inch stroke makes a convenient tool for placing these salts in the hole. The holes should be sealed with grafting wax or other suitable materials.

Many of the county agents in California are equipped with kits for making these limb injection tests. In one county two years after four small olive limbs had shown striking response to boron injections, almost the entire affected area of about 2000 acres had been commercially treated.

A summary of our experience with diagnostic tests and corrective treatments for the several elements follows:

**Boron.** Borax is used commercially on a considerable acreage of olives and pears in five counties. In both species the deficiency is readily corrected by dry salt injections, foliage sprays and soil applications. Severe symptoms can be corrected in large olive trees with 1/2 pound of borax in the soil. The pear responds satisfactorily if borax is put on the soil in the early fall; but spring applications may fail to prevent symptoms in the current season. One phase of boron deficiency in pear is blossom killing followed by dieback of shoots and branches which may appear unexpectedly within the deficiency districts.

When such blossom killing is noted, a prompt spraying of the immature foliage is very effective in preventing further dieback. Except for such special cases soil applications are generally recommended.

**Copper.** Commercial experience with this deficiency has been very limited in the few small fruit districts where it has been observed. Bordeaux mixture has afforded correction when applied to immature leaves of apple, pear, prune, and walnut. Five pounds of copper sulfate produced normal growth in young prune trees in one orchard, but 50 pounds per tree failed to correct affected pear trees in other areas.

**Iron.** Iron deficiency, or lime-induced chlorosis, is included in this discussion because it behaves like the micro-nutrient elements. The only corrective method used commercially for trees is the dry salt injection, usually of ferric citrate. Many pear growers have kept trees in production for the last 20 years or more that would not have been profitable otherwise. Power drills and compressed tablets or pellets now facilitate this operation.

**Manganese.** Mild symptoms of this deficiency can be found quite commonly on several of our deciduous orchard trees on many soil types. Where the trouble is severe enough to require attention, it is corrected by foliage sprays of manganese sulfate. Ten pounds of manganese sulfate per tree in the soil has been effective on peach in experiments in several areas.

**Zinc.** Zinc deficiency affects a far greater acreage of fruit trees and grapevines in California than does that of any other element except nitrogen. All the stone fruits but cherry are corrected satisfactorily by dormant applications of zinc sulfate as a spray. In a few instances, particularly with young trees growing very rapidly, a foliage spray is used alone or to supplement the dormant spray. Spur-pruned grapevines are treated by daubing the freshly cut pruning wounds with a strong solution of zinc sulfate (1 1/2 pounds per gallon). Other methods must be used for cherry and walnut as they are seldom helped by either dormant or foliage sprays. The only certain method of applying zinc to these trees is to drive pieces of galvanized iron into the trunk and main limbs. This method is quite tedious, but the effect seems to last indefinitely if enough zinc pieces are used to meet the requirements of the increase in growth of the tree.

Soil applications are effective in a few areas but are not dependable because of the high fixing power of the soil in many areas where zinc deficiency is severe.

AMERICAN FRUIT GROWER



## MARKETING IN EUROPE

(Continued from page 17)

and pears were about as good as I had ever seen them.

In France, many new orchards have been established, and greater emphasis is being given to improved growing practices. Growers who were able to keep up their orchards during the war have been making good money. There has been, and still is, a very active demand for nursery stock, especially apples and stone fruits.

The development has been confined largely to the southern part of the country, especially in the Rhone, Garonne, Clermont-Ferrand, and Loire districts. More recently, plantings have been made in the northern part of the country. The planting list includes certain American varieties such as Red Stayman, Starking, Richared, Golden Russet, and Golden Delicious.

The government is encouraging the planting of orchards and the improvement of cultural methods. It is not, however, subsidizing the program. The government has also standardized export packages. This is reflected in some improvement in the type of package used for domestic marketing. The increase in the planting of dessert varieties is offset to some extent by the gradual decrease in the planting of cider stock. Although accurate statistics are unavailable, it is known that there has been an increase in fruit acreage in Belgium, especially of apples on dwarf stock. There has also been some improvement in quality as well as in grading and packing.

In Holland, the planting of fruit trees decreased somewhat during the war years but was stepped up immediately following liberation. Plantings have been made principally in Zeeland, Betuwe, and Limburg. The life of an orchard in Holland is approximately 40 years. The area planted to fruit is about 100,000 acres. In order to maintain this acreage it is necessary to plant about 2,500 acres each year. During the occupation, the Germans attempted to prevent the planting of new orchards and even setting out replants; as a result, plantings were reduced to approximately 1,700 acres annually.

Fruit growing in the Scandinavian countries has shown gradual improvement during recent years, especially in Denmark. The Danes are very proud of their accomplishments, and are bending every effort to attain not only a state of self-sufficiency but also to develop an export trade as well.

(Continued on page 37)

## Complete 'wipe-out' of PLUM CURCULIO now possible with CHLORDANE



Where plum curculio is a problem, Chlordane is the answer. Midwest research entomologists last year reported it gave the most exceptional control of any toxicant tested.



Superior insect kill, however, is only one of Chlordane's advantages. Other benefits are:

1. No hazard of disflavoring fruit.
2. No hazard to trees, foliage, or soil.
3. Chlordane volatilizes, removing hazard of toxic residue by harvest date.
4. Adult curculio are killed before eggs are laid, hence no stings.
5. Chlordane is non-repellent—destroys rather than scatters insects.
6. Brown rot infection held to minimum by reduction of feeding punctures.
7. Chlordane is economical to use—compatible with weed-icides, fungicides and other insecticides.
8. Scope of Chlordane effectiveness will cut cost of auxiliary applications.
9. Chlordane formulations mix readily and are pleasant to use.



For certainty of insect kill and safety to your crops, no other insecticide offers you so many advantages as Chlordane. Your local dealer can supply you with Chlordane-based insecticides—emulsions, dusts, and wettable powders—in the brand-named products of leading chemical companies. Early season treatment can pay big dividends in higher yields and better quality—so be prepared. Buy NOW.

## Simultaneous Control OF MAJOR FRUIT PESTS

In addition to plum curculio, Chlordane kills:

"Cat-Facing" Insects  
Ants  
Japanese Beetle Larvae  
Grasshoppers

Cherry Fruit Fly  
Apple Maggot  
Cherry Fruitworm  
Strawberry Root Weevil

and many others

Intervals between Chlordane applications can be as short as four days without harming fruit or trees—as long as twenty days, still maintaining insecticidal effectiveness. Consult your local agricultural authority as to the schedule best suited to your local conditions.

For complete information, write for  
Technical Supplement 208

"Direct Control of Plum Curculio"

Yours for the asking. Please address Dept. 20

**Julius HYMAN & Company**  
DENVER, COLORADO

WHEN BUYING INSECTICIDE, BE SURE THE LABEL STATES PLAINLY

contains **CHLORDANE**

THERE IS NO SUBSTITUTE



# WHY A PENCO<sup>\*</sup> PROGRAM is a basic program

Here's a thorough-going insecticide program developed by Pennsalt—makers of Penco products. Pennsalt produces many chemicals that go into Penco products right from the ground up—giving you high quality, superior results and low prices. Use this Penco program for effective control and bigger fruit profits.

**For worm control: PENCO WB-50<sup>\*</sup> with 50% DDT**

This DDT spray contains superior spreaders and stickers for better coverage and reduced run-off. Micron-sized for better suspension.

**KRYOCIDE<sup>\*</sup> Natural Cryolite**

This famous cryolite insecticide has been a leader for 16 years. It will not sterilize soil, upset natural insect balance, nor harm tender foliage or fruit. Not acutely toxic to man or animals, nor irritating to skin of sprayers and pickers. When in doubt, use *Kryocide!*

**For aphid control: PENCO<sup>\*</sup> BHC (Benzene Hexachloride)**

W-12 Wettable Base has the very high Gamma Isomer content of 12%. Valuable new addition to spray programs, especially for apple aphids (green, rosy, woolly) up to fruit formation. Conforms to Pennsalt's rigid standards of quality and uniformity.

**For spider mites: PENPHOS (Parathion)**

Now in experimental stage is Pennsalt's newest organic phosphate insecticide—*Penphos* (containing Parathion). Tests at Pennsalt's Whitmarsh Research Laboratories show it holds great promise for control of various mites, spiders, aphids. (Should be available by Summer!)

\*REG. U. S. PAT. OFF.

For further details, write to

**PENN SALT**  
AGRICULTURAL CHEMICALS



## MARKETING IN EUROPE

(Continued from page 35)

Before the war, Europe imported large quantities of fresh and dried fruit. Competition was keen, but we met the competition. Since the war, attempts have been made to reestablish ourselves in these markets. Some progress was made, but it was artificial and, therefore, short-lived. World War II has not diminished the nationalistic tendencies which developed between the two wars and tended to strangle world trade. The desperate economic conditions in which many countries find themselves have resulted in closer national control of production, foreign trade, exchange, and distribution. State trading and governmentally authorized and supervised trading are common. Trading with many countries will be carried on partly in a free market, but largely under government arrangement or control.

While fruit is recognized by nutritionists as being necessary in the diet, treasury officials who control disbursements of dollar exchange for their countries are inclined to put fruit into the luxury class. The nations of western Europe will, of necessity, continue to husband their dollar resources. They will scrutinize all purchases of food and raw materials. Under the circumstances, the fruit industry of this country will have to be on the job. It calls for able representatives abroad to take whatever steps are possible to avoid discrimination and to be on the alert for any and all trade opportunities.

## WATER SUPPLY

(Continued from page 24)

competent water well driller with irrigation experience. This can be done in most cases by contacting the State geologist or the State health department. After the proper driller has been located, his recommendations should be followed just as a patient follows his doctor's advice. By employing a driller, the owner will get more for his money, and the necessity of test drilling will be kept to a minimum—in some cases even eliminated. Where there is a question in the mind of the driller as to the capacity of a contemplated well, he will advise the owner to install a test well of a much smaller size. On this basis, the only gamble the grower will take to determine the probability of securing adequate water for irrigation will be the comparatively small cost of one, or possibly more, test holes. A water well which has adequate capacity to fill all the fruit grower's requirements is, indeed, a valuable asset and a source of greatly increased income.

## NEW BULLETINS

● **Home Fruit Growing in California** (Circ. 117, Rev. 1947) Coll. of Agr., U. of Cal., Berkeley, is written for the non-commercial grower who wants to know what varieties to plant in his particular location and how to cultivate and harvest them.

● **Peachtree Borer Control in Delaware** (Bul. 261, 1946) U. of Del. Agr. Exp. Station, Newark, gives experimental procedure, results, and recommendations for control of the peachtree borer.

● **Diseases of the Walnut in the Pacific Northwest and their Control** (Station Bul. 435, 1945) Oregon Agr. Exp. Station, Corvallis, discusses the various diseases of walnuts, tells how to recognize them and how to control them.

● **Grape Culture: Planting, Handling and Later Care** (Circ. 313, 1947) U. of Mo. Coll. of Agr., Columbia, completely covers the various phases of grape growing in Missouri.

● **Growing Berries and Grapes** (Pub. 297, 1946) Agr. Ext. Service, U. of Tenn., Knoxville, gives the more important facts about the growing of various berries and grapes in Tennessee.

● **Home Drying of Fruits and Vegetables** (OP-45) Oklahoma Agr. Exp. Station, Stillwater, is a short pamphlet describing several methods of drying fruit, and gives a table of directions for individual fruits and vegetables.

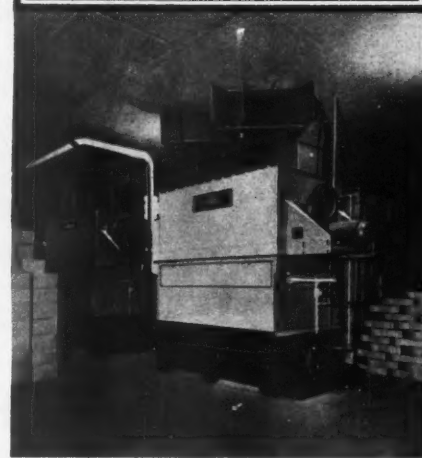
● **Cover Crop and Sod Plus Mulch Orchard Soil Management** (Bul. 672, 1947) Ohio Agr. Exp. Station, Wooster, reports tree growth, yield records, color, and size of fruit, and the cost of operation for 30 years in an experimental orchard at the Ohio Station.

● **Apple Juice Preparation and Preservation** (Circ. Bul. 206, 1947) Mich. State Coll. Agr. Exp. Station, East Lansing, tells about the commercial processing of apple juice.

● **Codling Moth Control**, New Mexico Agr. Exp. Station, State College, is a report of seven years of experimental work and contains information on timing sprays, insecticides and methods of application, comparative costs of insecticides, and supplemental control methods.

## NIAGARA "NO FROST"

Gives Increased Capacity  
for Higher Production



● The ice on your refrigeration coils costs you more than just the trouble and interruption of defrosting. There is constant loss in power, money and production that starts with the first film of frost and increases by the hour.

The NIAGARA "NO-FROST" METHOD eliminates this loss completely, giving you constant full capacity, maintaining your specified temperature without interruption, protecting the quality of your product, saving trouble and maintenance difficulty, and increasing your production at lower cost.

In any refrigeration installation requiring refrigerant temperatures below freezing, NIAGARA "NO-FROST" improves operating conditions, and in food refrigeration, it helps improve the quality of the product.

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THEY CARRY AND PROLONG THE EFFECTIVENESS OF POISONS



## ORTHO PHYTONOMIC OIL SPRAYS PLAY NO FAVORITES

THEY CRACK DOWN ON EMERGING CODLING MOTH AND RED MITE, AND ON THE  
LEAFHOPPER, GREEN APPLE APHID, PISTOL CASE BEARER AND PEAR PSYLLA.

### ORTHOL-D

This spray oil is of high purity and good body. Use it with preferred poison when codling moth and red mite first emerge.

### ORTHOL-K

This superior lighter spray oil is for use through the summer. It prevents the build-up of red mite and many other pests.

And for QUICK, DECISIVE ACTION use the ORTHO organic contact insecticide.



## VAPOTONE

It kills red spider mites, hatching mite eggs, mealybugs and certain scale insects, with fast action. Ask for detailed directions before use.

## CALIFORNIA SPRAY-CHEMICAL CORPORATION

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SOUTH HAVEN, MICHIGAN    BOISE, IDAHO

## STATE NEWS

(Continued from page 28)

This event will give the consuming public an opportunity to visit the principal fruit producing area of the state at a time when its orchards are displaying their colorful blossoms.



John Chandler

John Chandler, prominent apple grower of Meadowbrook Orchards, Sterling, has recently been appointed Commissioner of Agriculture. Mr. Chandler is known to fruit growers throughout the country for the fine job he did as executive secretary of the National Apple Institute.—*W. D. Weeks, Univ. of Mass., Amherst.*

**SOUTH CAROLINA**—The Annual Peach Clinic was held in Spartanburg on January 14 and 15 with approximately 800 attending. This was the second of these so-called Peach Clinics which are held in place of a State Horticultural Society. Some of the speakers were as follows: Dr. Byrley Driggers of New Jersey spoke on Oriental fruit moth and its control; Mr. M. L. Bobb of Virginia spoke on curculio and its control with special emphasis on the use of chlordane; Dr. J. C. Dunegan of the USDA delivered talks on both brown rot control and bacterial leaf spot on peaches. Other subjects were marketing, irrigation, and general cultural practices.

Grower interest in these annual meetings has become so intense that a movement is already under way to organize the annual clinics into a grower organization. The aim at present is to organize a horticultural society in South Carolina, but there is a definite possibility of such an organization being called the South Carolina Pomological Society since the vegetable people have shown very little interest so far. A steering committee was appointed, made up of 16 growers, a great majority of whom are young growers. A constitution and by-laws committee was also appointed. These two committees are to work out complete plans to be submitted at the next Annual Peach Clinic which will be held on January 12 and 13, 1949, at Spartanburg, South Carolina.

The peach growers of South Carolina and North Carolina are now working on a marketing agreement for the peach growing sections of North and South Carolina as the marketing area. The proposed agreement has been written. Public hearings were held early in January at Spartanburg, South Carolina and at Rockingham, North Carolina, and the next step is the grower informational meetings to be held at numerous locations throughout North and South Carolina. If such an agreement is made, it will go into effect prior to the beginning of the heavy peach movement from South Carolina.—*Roy J. Ferree, Ext. Horticulturist, Clemson Agr. Coll., Clemson.*

AMERICAN FRUIT GROWER



Your ORTHO Fieldman says:

I'D LIKE TO  
TALK WITH YOU  
ABOUT **GAMTOX**®  
IT CAN SAVE  
YOU MONEY!



**GAMTOX** is outstanding  
in the control of these  
"money-eating" pests:

Plum Curculio

Woolly Apple Aphis

Various Thrips



**GAMTOX** is a new ORTHO insecticide containing Benzene Hexachloride: **GAMTOX** is *outstanding* in the control of Plum Curculio on peaches.

**GAMTOX** gives effective control of Woolly Apple Aphis on pears and apples. **GAMTOX** has been used very successfully on plums and prunes . . . and on forage and field crops.

**GAMTOX** is also *outstanding* in the control of many insects on cotton as well as thrips on many other crops . . . and against many livestock pests.

**GAMTOX** is available as either a spray or a dust:

**GAMTOX** Wettable No. 100

**GAMTOX** Dusts (available in various strengths)

**GAMTOX-S** Dusts (available in combinations with Sulfur)

**GAMMACIDE** Cotton Dusts (available in various strengths)

**GAMTOX** is broadly compatible with other  
insecticides and fungicides.

See your ORTHO Fieldman for further information about **GAMTOX**  
and for recommendation regarding application and use in your area.

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SCIENTIFIC PEST CONTROL

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## IRRIGATION

(Continued from page 19)

it is the stone fruits and grapes that will be planted most extensively. Peaches and grapes will be the leading fruit crops. Naturally, part of the tonnage will go to the fresh market, but the great bulk of it will be processed. Most of the peaches will be processing varieties of the Elberta type, and the grapes will be largely Concords. Plums (including prune types), apricots, and sweet cherries will be about equally important in terms of acreage.

With the completion of the Roza

distribution system in the next two years, it is likely that it will be a minimum of fifteen years before fruit plantings will become stabilized. Much can happen to the economy of an area in that time. The estimates that are given here are based on present and indicated future plantings and assume a curtailment and stabilization of fruit prices to the grower.

### The Columbia Basin Project

Since before the turn of the century, people have visualized the eventual irrigation of the vast Columbia Basin. When fully developed, it will include about 1,000,000 acres of irrigable land.

The first land to receive water in the Columbia Basin Project will be at the Basin's southern end, near Pasco. This will be irrigated by pumping from the Columbia River until gravity water becomes available at a later date. Water may be available this spring for about 5,000 acres from this pumping plant. Nobody knows when all of the Columbia Basin Project will be irrigated.

Many unknown factors contribute to this, such as congressional appropriations, economic conditions of the country, and the wishes of the people who occupy the land. Such an immense, sparsely populated tract is not settled as fast as the engineers can build the distribution system. The Roza depends upon existing towns for its commerce, but in the Columbia Basin many entire towns must be built where there is now no sign of human habitation. True, there are now some towns—and even sizable private pumping projects for local irrigation—in the Basin; but it may take 25 to 50 years before the project is completed and settled.

As this is written, there is still some doubt as to whether or not the Wahluke Slope and part of the area to the southeast, bordering the Columbia River, will be included in the project. This area lies immediately across the Columbia River to the north and east of the Hanford Works. The Atomic Energy Commission has not yet announced a decision as to the relationship of this area to the Hanford Works.

In contrast to the Yakima and Wenatchee Valleys, the Columbia Basin Project is not potentially a major fruit producing area. Within the project, however, there are several small, but very desirable, fruit areas. Previous to the start of the development of the Columbia Basin Project, a "Joint Investigations Committee" composed of State and Federal representatives and other interested agencies made a study as to types of farming likely to be followed on the Columbia Basin. This committee estimated that at a mature state of development the acreage of tree fruits, small fruits, and grapes would approximate 30,000 acres, or 3 percent of the irrigated land. Changes in western population, economic conditions, and the possible removal of part of the Wahluke Slope from the project may result in some changes from these estimates.

The Wahluke Slope, in particular, stands out as the most favorable area for tree fruits and grapes. This area covers roughly 98,600 acres of irrigable land. Elevations range from 400 to 1,200 feet above sea level. The frost-free season varies as to location from 175 to 190 days. It is one of

# LOOK TO Stauffer

## STAUFFER PRODUCTS

### Magnetic "70" Concentrated Sulphur Paste

Contains not less than 69% sulphur and is especially recommended for effective, economical control of Apple Scab.

### Magnetic "95" Spraying Sulphur

Stauffer's answer to the many requests for a micron-sized dry, wettable sulphur. Contains 95% Sulphur whose particle size falls between 4 and 5 microns surface average diameter.

### Magnetic "90" Dusting Sulphur

The new micron-sized dusting sulphur containing not less than 90% Sulphur whose particle size is between 4 and 5 microns surface average diameter.

### Stauffer Insecticide Concentrate No. 50-20

50% DDT (Dichloro-Diphenyl-Trichloroethane) — Dust Base or Wettable.

### Stauffer Insecticide Concentrate No. 10-100

10% Gamma Isomer, BHC (Benzene Hexachloride) Dust Base or Wettable.

### Stauffer Insecticide Concentrate No. 40-80

40% Chlorinated Camphene.

## FOR COMPLETE INSECT AND FUNGUS CONTROL

First, we suggest that you contact your local Experiment Station or County Agent and discuss your pest control problems. Get the latest recommendations for your particular locality . . . then don't wait . . . stock up immediately with Stauffer's Sulphurs, DDT, BHC and Chlorinated Camphene, concentrates or mixtures.

Write today for complete information on the use of the Stauffer products in which you are interested. We'll also give you the name of your nearest Stauffer Dealer who will be glad to advise you on the proper grades and amounts of Stauffer insecticides and fungicides you will need this year for complete pest control.

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the earliest large areas in the State of Washington. There is good reason to expect that the percentage of irrigable land which is planted to fruit on the Wahluke Slope will approach that which has been estimated in this article for the Roza. If this holds true, the Wahluke Slope, alone, will have as great as, or greater, fruit acreage than the Roza. Under the present construction plans, this area will be among the last to receive irrigation water.

The next most important area for fruit production is the Royal Slope which is a narrow strip to the south of the Frenchman Hills. This area has approximately 112,000 acres of irrigable land, but it undoubtedly will have considerably less fruit acreage than the Wahluke Slope. The soils of the Royal Slope are quite sandy, and large areas are considered too shallow for tree fruits. In contrast, the Wahluke Slope has extensive areas of some of the best orchard soils in the State.

A small acreage of fruit may also be planted in the northwest portion of the Quincy Basin. With the possible exception of grapes and small fruits, the Pasco Slope is not considered as being well-adapted to fruit. Included in this area are the 5,000 acres which may come under irrigation this spring.

Considering the Roza and Columbia Basin Projects as a whole, the increased acreage of tree fruits and grapes is not expected to be great. To be sure, the fruit acreages on the Roza and Wahluke Slope will be substantial, but these constitute a relatively small percentage of the total irrigable land in central Washington. The acreage which is now in fruit will continue to be the source of most of Washington's fruit. New land will only supplement it.

### Booklets and Films

- The Frick Co. has published a bulletin called "Ice and Frost." This is Bulletin No. 100-D, and it pictures their new refrigerating machines giving specifications and describing their methods of operation.
- Growing aids for the home gardener are provided in a pamphlet by the U. S. Rubber Co. Its title is "Pest Control Simplified," and it describes the use of new organic chemicals in various spray programs.
- "Welding Comes to the Farm" is the title of a new motion picture prepared by the Lincoln Electric Co. This film shows the many interesting ways arc welding can be used on a farm and also explains the welding process and just how the equipment works.

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For it is the mass transportation provided by freight trains which makes the miracle of mass production possible. Every day 20,000 of these workaday freights shuttle food, fuel, and raw materials to and from the four corners of the country. From the nation's industrial plants they fan out all over America carrying a sparkling variety of goods.

The job these freight trains do staggers the imagination. They carry a traffic equivalent to moving more than a million tons of freight a mile every minute of the day and night.

In doing this, the railroads today are paying wages and prices for the things they buy which average 75 per cent higher than before the war...while the average pay they get for hauling a ton of freight one mile has gone up less than half that much.

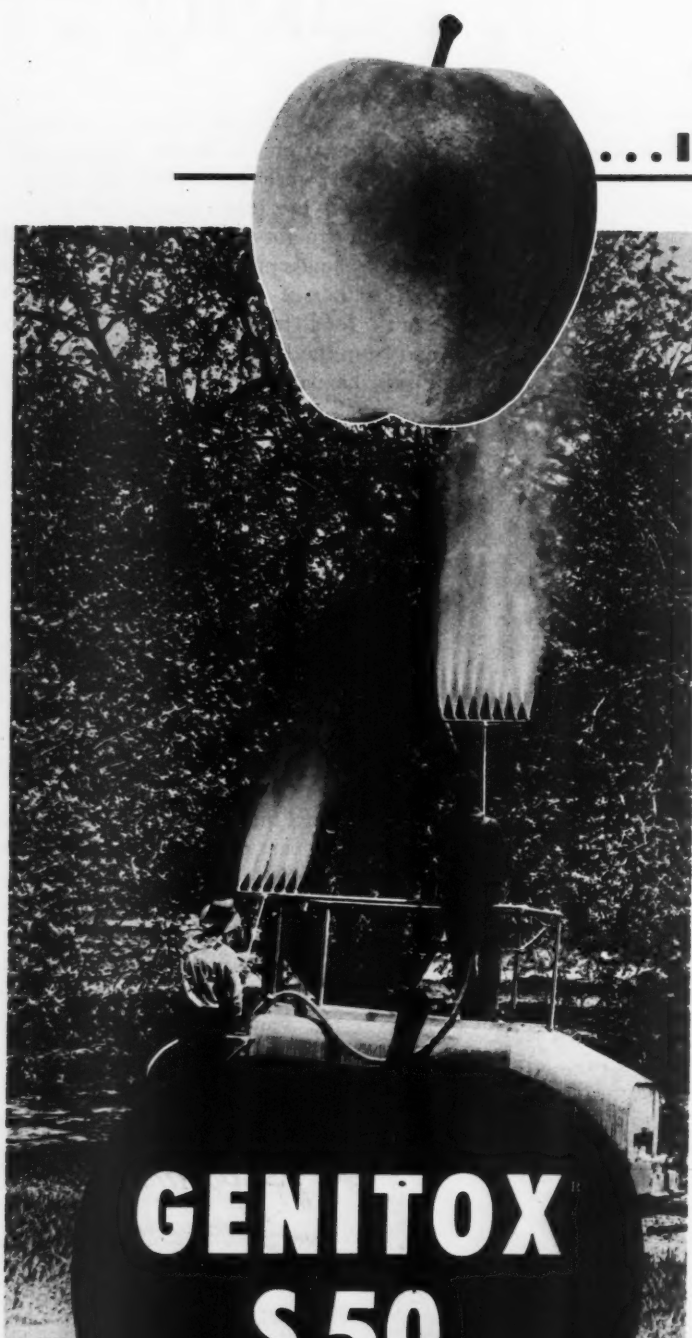
So the next time you see a freight train pounding past, remember that to *keep on* providing the low-cost mass transportation on which the miracle of American mass production depends, railroads must be allowed to earn enough to keep their plant and equipment abreast of the needs of the nation.

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S 50**

MICRON-FINE  
**50% DDT**  
SPRAY POWDER



Growers who know and have seen the performance of DDT spray materials find Genitox S50. *different* and *better* ... both for its trouble-free action in the sprayer and for its unexcelled "high deposit" properties.

Above all, growers have been impressed by the smooth, unbroken spray covers Genitox S50 gives. That's because its especially processed micron size particles go into finely flocculated suspension in the spray mixture. When sprayed, these fine particles tend to "stay put" where they hit with the minimum of insecticide run-off.

Advantages like these pay off in higher packouts of the "money fruit." So, when you buy your DDT spray material, insist on Genitox S50. You, too, will see the *different-and-better* qualities.

## GENERAL CHEMICAL DIVISION

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# GROWERS CAN CONTROL SWEETNESS OF CITRUS

**W**HEN DOES AN orange taste best? That was a big question which confronted researchers at the USDA Field Laboratory, Orlando, Fla., back in 1935. Research was started then on this problem, and now some interesting data are revealed in Volume 49 of the proceedings of the American Society for Horticultural Science.

Scientists knew that since oranges and grapefruit contain no starch, they can ripen only while attached to the tree. The first step, then, was to discover what factors contribute to the flavor and palatability of the fruit during the tree ripening process. If a method could be found to produce sweeter and more tasty fruit, sale of the product should be easier.

Fruit from the various experimental plots was harvested at regular intervals beginning before prime maturity and continuing through the optimum stage for picking. To judge the effect of a given treatment, a corps of tasters was assembled to sample the fruits from each test and to determine whether the fruit was acceptable for good eating.

Eating quality of citrus fruit is determined largely by the percentage of acid and total solids contained in the fruit, and by the ratio of acids to total solids. Citrus fruits, though containing organic acids, are considered alkaline fruits because the juice is rich in mineral salts which impart an alkaline reaction during digestion. At the same time the organic acids are destroyed and do not acidify the digestive system.

The Florida tests essentially involved finding out just what factors contributed to changes in acid and total solids content of the fruit during ripening. Experimenters found that varieties vary in solid and acid content, some containing more than others. For instance, they discovered that in the group of early varieties, Hamlin contains a lower percentage of total solids and a higher percentage of acids than Parson Brown. Parson Brown was the first to ripen, reaching acceptable quality for the judges about November 11, while Hamlin did not reach this point until December 3.

Of the midseason varieties, Florida Seedling contained significantly more acid and total solids than Pineapple or Homosassa varieties. The latter two were similar in acid and solids content.

Another interesting phase of the test related to the effect of rootstock upon quality of the fruit. Parson

Brown and Hamlin on rough lemon rootstock yielded fruit with lower percentages of both acid and total solids than when on sour orange rootstock. The late variety, Valencia, responded similarly, and it was further noted that this variety ripened significantly earlier when grown on grapefruit rootstock. On this stock it ripened to prime quality about February 20 while on all others it was delayed until March 1.

It should be mentioned that the state maturity requirements are lower than those set by the taste judges of this experiment. In other words, if the

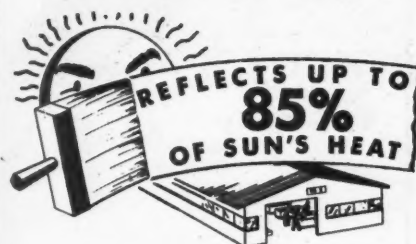
## HANDY ANDY

A fruit grower can now do two jobs at the same time by using a combination seeder and fertilizer spreader invented by Harold A. Skibbe of Eau Claire, Mich. A divided hopper and two spinners do the combination job, while controls direct the spread of the fertilizer under a tree or in the middle of a row crop and determine its width. Feed valves, operated from the driver's seat, control the amount of either seed or fertilizer spread. Several Michigan farmers have used the combination seeder and spreader and found that 100 acres could be spread in a day's time if two men were on the job.

tasters had set the requirements, the fruit would have to be of higher eating quality than is prescribed by the present law.

A reasonable conclusion from the experiment may be that to increase consumer acceptance of Florida oranges, they should be left on the tree until their acid content is at a minimum and their total solids content a maximum, whether prescribed by law or not. Also, the citrus grower can control the quality of his product to some extent by choosing the proper rootstock. By this means he can also, in a limited way, control the time of optimum maturity of a given variety.

## INSULATE AND BEAUTIFY FRUIT SHEDS and COLD STORAGE BUILDINGS with ALUMI-SHIELD



## REDUCES REFRIGERATION COSTS!

Offers the heat-reflectivity of a soft, silvery, "easy-on-the-eyes" aluminum finish... plus the added durability of quality asphalt and long asbestos fibres!

## EXTRA WINTER PROTECTION TOO!

Alumi-Shield contracts and expands through temperature extremes the same as the surface it protects. The aluminum finish affords extra resistance against wet, wind, cold.

## EASY TO APPLY!

Comes ready-mixed in correct proportions. One coat does the job. Use on roofs and sidewalls of composition, brick, concrete — goes right over metal flashing and gutters, too!

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**BLOSSOM THINNING**

(Continued from page 21)

applied the second day of full bloom, or after about 48 hours of good bee activity. There are few orchards, however, where such thorough provisions for cross-pollination exist.

Elgetol and DN #1 are the DN formulations which have been tested most extensively. Elgetol is a liquid; DN #1 is a powder. On the basis of the active ingredients, one pound of DN #1 is equal to approximately a quart of Elgetol for thinning purposes. At the same concentration, use of these two materials results in about the same degree of thinning. In most tests to date, however, DN #1 has caused less foliage burn than Elgetol. Some DN's may cause considerable injury to the young foliage, especially Elgetol in wet seasons, but this is not considered particularly harmful to the tree because the growing points are not apparently damaged. A luxuriant leaf growth follows the treatment, if the crop is sufficiently thinned. This favors fruit bud formation. This conclusion is based on the performance of a block of Wealthy trees which have been induced to bear commercial crops annually for the last five years by blossom thinning each season with a DN spray. The main disadvantages of the DN's for thinning are the necessity for accurate timing and their adaptability to a limited number of varieties.

**The Auxin Spray for Thinning**

The effect of App-L-Set in thinning differs from that of the DN's. It can be used on the second or third day of full bloom or up to, and including, the calyx stage. Some thinning effects have been obtained from applications made two to three weeks following calyx. It causes some fruits, that would normally stick, to drop during the early post-bloom period. The fruits on the weakest wood or the potentially low-grade fruits seem to be the most susceptible to the treatment. The longer the treatment is delayed after bloom, the stronger the concentration required to accomplish a given amount of thinning. Too strong a concentration at any definite stage of development might be expected to over-thin.

App-L-Set does not burn the foliage. In many tests no visible effects have been noted from the treatment except the reduction in set that becomes apparent four or five weeks after bloom. During the wet spring of 1947, App-L-Set did cause some wilting and dwarfing of the foliage of some varieties.

**AMERICAN FRUIT GROWER**



## THINNING

(page 21)

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## Results of Treatments

In tests in 1947, both of the DN materials and App-L-Set thinned Wealthy and Baldwin satisfactorily, although two applications of Elgetol caused considerable foliage burn and resulted in slight over-thinning of the Baldwin. Considering the total volume of fruit burn per tree, and the size of fruit, the following two treatments were the best: (1) An application of DN #1, 1 pound per 100 gallons, applied at full-spur bloom, followed by a spray of one-half pound per 100 gallons when the terminal bloom opened, and (2) A single application of App-L-Set, 8 ounces per 100 gallons, applied at the calyx stage. A treatment of 6 ounces of App-L-Set per 100 gallons plus 1 pint of summer oil used at the calyx stage thinned slightly more than the 8 ounces of App-L-Set without oil. These tests were conducted in vigorous orchards located on well-drained land having a slope of about 10 degrees.

Another test was made in a Baldwin orchard on level land with imperfect drainage. In this orchard, where the soil was water-logged because of heavy rains before and following the bloom period, the check trees did not set quite so heavily as those in the well-drained block, but enough for thinning. Single applications of both the DN materials applied at full bloom reduced the set enough to produce fruit of good commercial size without reducing the total volume. App-L-Set treatments both with and without oil applied at the calyx stage reduced the set well below that caused by the DN's.

Similar results were obtained with App-L-Set on the Delicious variety. A spray containing 4 ounces of this material per 100 gallons was applied at the calyx stage to trees in two orchards—one well-drained, and the other seriously water-logged. Provisions for cross-pollination were excellent in both orchards. Alternate rows were of a different variety. During the bloom, weather was favorable for cross-pollination, and the bee population was adequate.

In the well-drained block, the check trees bore an average of 18 bushels per tree, 52 percent of which were only  $2\frac{1}{4}$  inches in size. The treatment reduced the total yield per tree to 14 bushels, but 92 percent of the crop was  $2\frac{1}{2}$  inches and up. More marketable fruit was produced by the thinned trees than by the check trees. In the poorly-drained orchard the check trees set only one-half as many fruits as similar trees in the well-drained block, and under these water-logged conditions the calyx treatment for thinning practically eliminated the crop.

One of the best attempts at the chemical thinning of apples observed in 1947 was performed by a grower on the Northern Spy variety. The trees were located on excellent fruit soil and were in a good state of vigor. The treatment consisted of 4 ounces of App-L-Set per 100 gallons applied at calyx. Data on fruit set and fruit size are given in the following table. The bearing area of these trees varied

### Chemical Thinning of Northern Spy

Treatment	No. Fruits Per 100 Blossoming Points
Check:	45.8
App-L-Set	
4 oz. calyx:	23.1
Percent Crop in Various Sizes	
	$2\frac{1}{4}$ " $2\frac{1}{2}$ "-3" 3"+
Check:	20.0 75.0 5.0
App-L-Set	
4 oz. calyx:	0.0 32.5 67.5

considerably because certain ones had lost large limbs in past years because of poor crotches. For this reason, individual tree yields were not recorded. Thinned trees with a full complement of limbs produced 40 boxes of fruit. The thinning treatment reduced the set on the more vigorous spurs to single fruits and eliminated practically all the fruits from the weak wood on the inside of the tree.

### Precautions

Weather conditions in New York State during the spring of 1947 were not particularly favorable for the use of thinning sprays. The average rainfall in the state during April, May, and June was 4.92 inches above normal. More than half of this excess was during May when most of the fruits were in bloom.

Because of this heavy rainfall some orchards on level land were water-logged for a period of from four to six weeks before, during, and after bloom. In many orchards the set was not in proportion to the bloom produced. It is quite possible, in those cases where the set was lighter than expected, that the trouble was caused by soil conditions as much as lack of cross-pollination.

Two very warm days occurred on June 10 and 11 when the first wave of drop, following the calyx, was occurring in orchards along Lake Ontario. At this stage of development, high temperatures that would increase transpiration while the roots were in a saturated soil and unable to function normally, could conceivably cause a temporary water deficit in the tissues of the tree and increase the shedding of young fruits.

It was under these conditions that

(Continued on page 55)

# AT LAST YOU CAN ERADICATE SCAB!

## PURATIZED AGRICULTURAL SPRAY

is a remarkable new organic fungicide which not only gives you reliable protection against the ravages of apple scab—it also gets rid of it fast!

For a low-cost spray program and a high degree of scab elimination get Puratized protection now, with this early spray through the first cover application.

Puratized Agricultural Spray is economical — 1 pint to 100 gallons of spray—and easily handled. Consult your local dealer or write today for full details on this amazingly efficient product!



## PURATIZED AGRICULTURAL SPRAY

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40 RECTOR STREET, NEW YORK CITY

Manufactured by:  
GALLOWHUR CHEMICAL COMPANY  
NEW YORK, N. Y.

# the bean stalk led to a GIANT, too...

Ice Cream production is almost a billion gallons a year! Every additional gallon of Ice Cream produced means more fruit and more nuts in the manufacture. No doubt about it...

**THE ICE CREAM INDUSTRY IS  
A GIANT MARKET FOR YOU.**



**INTERNATIONAL ASSOCIATION OF ICE CREAM MANUFACTURERS**

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# APS

**GEORGE MILBURN**

By V. V. CLARKE

**A**T BRISTOL, Ind., a quarter of a century ago, "Uncle George" Milburn's horticultural operations during the '90s were a common topic of conversation. A visiting nurseryman from many miles away would tell how Milburn had directed him on the way to success; and growers told of valuable advice received from this noted horticulturist. In fact, it seemed that the horticulture of this northern Indiana area centered about the man.

As a teen-aged boy, Milburn had come to Indiana from Smith Falls, Ontario, when his parents died. He had gone to South Bend to work with an uncle and there obtained his education by reading and attending night school. Later, he and his uncle ventured into the manufacturing business, building the Milburn wagon until the company was eventually sold to the Studebaker brothers at South Bend.

While travelling for the wagon company, young Milburn called at the Hanford fruit farm and nursery at Bristol, where he not only became interested in Hanford's horticultural work, but also in his daughter. The young man liked working outdoors in the nursery and orchard where he no longer suffered from the throat trouble that had bothered him in office work, and finally he went into partnership with Hanford and gave up manufacturing. Perhaps his courtship and marriage to Miss Hanford influenced this action more than did the condition of his throat.

The new business partnership began in 1875 with about 40 acres of small fruit and nursery stock which Milburn later developed into a thrifty 240 acre orchard. Although the nursery was an important part of his business at first, he later turned it over to Vernon Kreider, a promising neighbor boy who has since, with Milburn's guid-

**AMERICAN FRUIT GROWER**

## Sale!

## Surplus Stock of New "FRIEND" SPRAYER PUMPS Priced Near Cost to Clear Inventory

These pumps are new merchandise and standard equipment on Love Power Sprayers. Prices have been reduced only to move excess stock and balance current inventories.

**Model FT-505**  
**High Pressure Pump**  
**Capacity—**  
**25 Gal. Per Min.**  
**\$319.75** list \$450.00

PUMP LESS AGITATOR GEAR BOX

*Write, Wire, Or Call—*

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### OTTAWA POST HOLE DIGGER

**There is no other like it!**

The digger you have been waiting for. Quick hitch to any tractor with power take-off. Fastest power auger return. Hi-speed two flight auger. Strictly one-man machine. Write for up-to-the-minute digger facts, low prices.

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### The CLINTON Gas Engine

2 H.P.—\$59.50 3 H.P.—\$74.75



● Complete, compact, dependable, 4 cycle, single cylinder, air cooled gasoline engines—by world's largest 2 H.P. producer. For power tools, saws, farm machinery, pumps, boats, bikes, etc. A penny postcard brings full information. Im'dt. delivery. Write today!

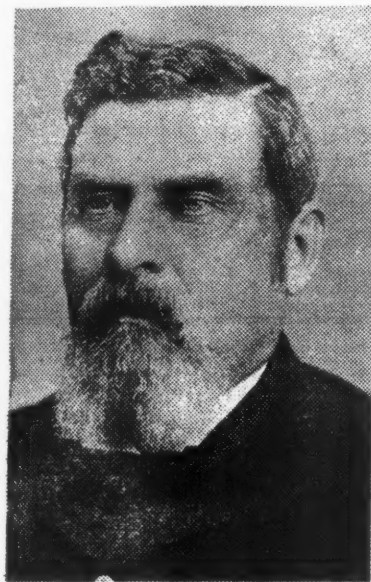
CLINTON ENGINE CO.  
16359 E. Jefferson, Detroit 30, Mich.



## HISTORY OF HORTICULTURE

ance, developed it into one of the largest nurseries in the Middle West.

As the Milburn Orchards grew in production, so did his program of marketing, and his fruit laden wagons were known in all of the young cities of the region as he merchandised his own product rather than trust it to the wholesalers. At the same time, his advertising and the quality of his fruit brought farm folk in from miles around to pick and purchase their canning fruit from his select varieties.

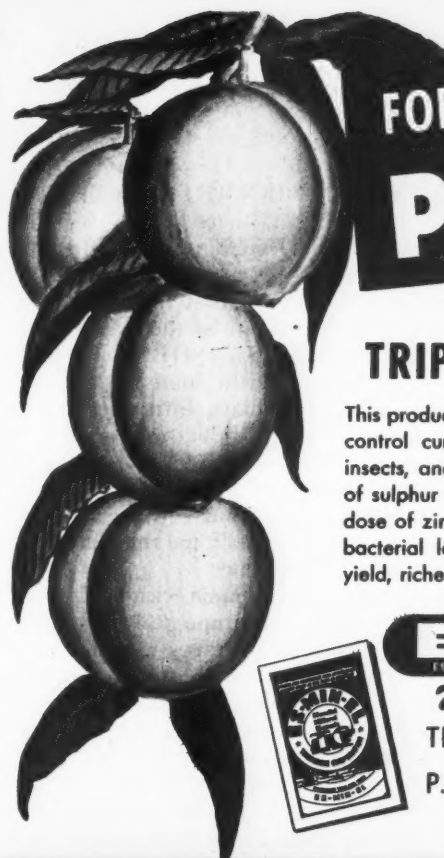


GEORGE MILBURN

George Milburn did not devote all of his energies toward his own interests. He served his neighbors by holding both county and township offices during many years of his busy life, and as a token of appreciation of his works, the Elkhart County Historical Society has erected a monument on his grave in the Episcopal cemetery in Bristol.

*Mr. Clarke, past president of the Indiana State Horticultural Society, is now president of Bristol Orchards, Inc., of Bristol, Ind. He has many recollections of George Milburn who made the Bristol hills famous for their fruit and nursery stock.*

APRIL, 1948



## FOR FINER QUALITY PEACHES

### Use TENNESSEE TRIPLE-PEACH SPRAY

This product contains amounts of lead arsenate to control curculio and other chewing and eating insects, and in addition has the required amount of sulphur to control fungus disease—has correct dose of zinc sulphate which aids in the control of bacterial leaf spot. Spray your crops for larger yield, richer fruit, healthier plants.



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## FARM-PAK Baskets

for modern merchandising  
of fruits and vegetables

(3 sizes—4, 8,  
and 12 quarts)

Actual marketing experience has proved the superior selling possibilities of Farm-Pak Baskets in self-service super-markets and roadside stands. Wherever better packaging and increased sales are desired the attractive appearance of Farm-Pak helps to improve profits from farm produce. Made of strong corrugated board, attractively printed in red and green. Space for grower's name and address.

Write for sample and detailed information.

THE  
OHIO BOXBOARD CO.  
RITTMAN, OHIO

MAIL COUPON  
FOR **FREE**  
SAMPLE



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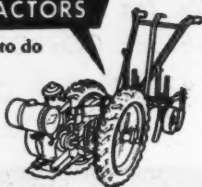
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Busy The Year 'Round  
If They Are

**Cunningham**  
ESTABLISHED 1838  
GARDEN TRACTORS  
MOWERS



#### GARDEN TRACTORS

Everything it takes to do close, accurate work with minimum effort... matched implements for jobs the year 'round. Two models... for home and truck gardener.



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**THE NEW  
POWER LAWN MOWER**



This new Cunningham Mower makes lawn mowing faster, easier... convenient clutch and throttle controls... big 1½ HP Cunningham engine... semi-pneumatic tires. You will like the speed and efficiency with which it works, and its ease of operation.

#### SICKLE BAR MOWER

Free wheeling... rubber tires... convenient controls... easy to operate... does hundreds of jobs... ideal for custom work. Reel Type Mower and Spray Rig Attachments. Also available with steel wheels.



#### PORTABLE ENGINE

Provides the power for Cunningham Mowers and Garden Tractors, and for many other power jobs... 1½ HP... precision construction... you can change it from garden tractors to mowers to many other power jobs quickly and easily by simply loosening four bolts.



Write Dept. 30 for big FREE Illustrated Catalog

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Rochester 8, New York

## NEGLECTED GRAPE VINES WILL PRODUCE IF PRUNED

By C. H. MILLER

**W**HEN I BOUGHT a small farm in Connecticut, there was a regular thicket of neglected grape vines which had been planted at least 25 years before and which hadn't been trimmed in ten years. Some of the main stems were as thick as my wrist. The first year I tried to grow some grapes, but the bunches that formed turned brown and dried up before they had a chance to ripen and I did not get a good bunch of grapes from the whole planting.

My neighbors told me they had had the same experience.

Then I got in touch with an Italian who had learned grape growing in the old country. His grapes were the talk of the neighborhood although the rest of us had failed. I asked him his secret and one Sunday, a year ago, he came over to see me. It was late March. He looked the thicket over and then took a saw and pruning shears and cut out at least nine-tenths of the vines. The few shoots left were trimmed back two buds from last year's growth. The trimmings filled a Ford truck. Because they harbor disease, he advised me to burn them,

which is no easy job, for the grape vines must be cut into short pieces.

Then my friend straightened the arbor and tied the few shoots to the wires. All the many vines that had run along the ground were pulled out. Without exaggeration, the trimmings from one vine made a six-foot pile.

But that was only the beginning. He took my spray pump and, using the Bordeaux mixture double strength, thoroughly soaked the vines he had left, even spraying around the vines where they entered the soil. The ground was still frozen, so he cautioned me to repeat that performance as well as spraying the vines at least five times more even after the grapes had formed. After following my Italian friend's advice, I picked a thousand pounds of grapes from vines that, until then, had not borne a single edible bunch.

Do not cut down your old grape vines as so many people do. A grape vine is good for fifty years if properly trimmed, fertilized, and sprayed. Try a vine this spring and let your motto be, "Spray with Bordeaux mixture, double strength."

## SUCCESSFUL ORCHARDS

By RICHARD C. BELL



**SPRINKLER IRRIGATION** is one of the best-paying practices in the apple and cherry orchard operation of Cecil Clark of Yakima, Wash. Clark finds that an irrigation job in one of his orchards can be done by one man in three hours, instead of taking two men one full day as it would with the ditch method. In this orchard he used four lines of sprinklers, three having 51 heads, the other, 40. The lines are changed every 12 hours.

Clark says that with this system there is practically no soil erosion, and the lack of ditches saves repair bills on machines that are moved through the orchard. Also, the crop can be moved more quickly with less bruising.



Get more  
\$ per  
ACRE!



"Save your crops from infestations. Use Alcoa Cryolite Insecticide. IT'S SELECTIVE! Controls harmful chewing insects. Helps save beneficial insects that destroy aphids, red mites and leaf rollers. Particle size uniformly controlled, means free dusting or spraying and maximum coverage."



Bigger Crops = More \$

**FREE**

Spraying and dusting  
chart sent on request.

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Packed in 50-lb. bags, 6-lb. bags  
and handy 1-lb. shaker cans.

**Alcoa Cryolite Insecticide**

APRIL, 1948

## STRONG ROOTS

(Continued from page 23)

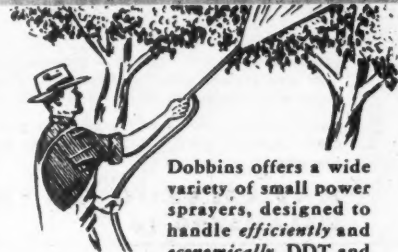
soil by increasing the permeability of the soil through improving its physical condition and by adding organic matter, by retarding the run-off of surface water, and by checking the evaporation of moisture from the surface of the soil and by improving the conditions for root growth within the soil, all serve to improve the conditions for tree growth during dry periods.

Sometimes it is no longer possible to continue mulching apple trees that have been under this treatment for several or many years. This also causes fruit growers much concern, as it frequently is believed that here again the loss of the mass of surface roots will be a severe shock to the tree. This idea is given some support by the fact that when mulching is abandoned the trees fall off in growth. Production is decreased.

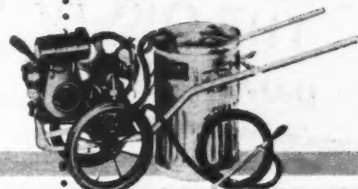
It is probable, however, that in most cases the decline in vigor of the trees is simply the result of a change to a less favorable system of soil management, rather than a direct result of any injury to the roots. It is true that many of the small roots in the top several inches of soil cease to function when the disappearance of the mulch permits this soil to dry out rapidly. This, however, is such a minor consideration that it need cause no concern. What the grower should be concerned with is that in abandoning a mulching program he may be heading toward declining production which in turn may lead to a declining bank balance. Mulching is such a profitable practice that other systems of soil management usually are compromise measures that are likely to be less efficient.

The type of soil in which an orchard is growing has such a great influence on rooting habits that the effects of soil management may be of secondary importance in root development. This is especially true on well-drained, fertile soils that permit and encourage the development of a deep and extensive root system, and store sufficient quantities of water to supply the needs of the trees during abnormally dry periods. On such soils the system of soil management followed is of minor importance as an immediate consideration. On shallow, poorly drained and poorly aerated soils, however, in which facilities for root growth are limited, and the soil water supply restricted, the soil management followed may be the deciding factor in the success or failure of the orchard, through the promotion of optimum or inadequate root development.

## YOU CAN DO THE JOB BETTER with Dobbins HIGH-PRESSURE POWER SPRAYERS

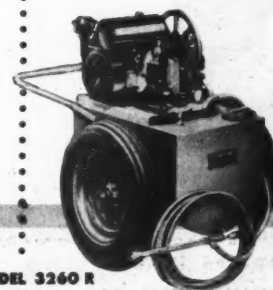


Dobbins offers a wide variety of small power sprayers, designed to handle efficiently and economically, DDT and other insecticide solutions, fungicides, weed control chemicals, whitewash, etc. Each model is sturdily built for years of hard service.



MODEL 4193 R

A portable, wheelbarrow-type, power sprayer, easily handled by one man. Double wheel construction for utmost stability. Only 16 inches overall width permits easy access to narrow passageways. Heavy gauge steel tank of 18 gallon capacity. Jet-type agitator keeps spray solutions thoroughly mixed.



MODEL 3260 R

Supplied with disc wheels and pneumatic tires. Fifty gallon tank of heavy steel, securely welded. Large filler opening prevents wasteful spilling, makes cleaning easier. Furnished with adjustable spray gun and 25 feet of high pressure hose... 3 gallons per minute at 300 lbs. maximum pressure.

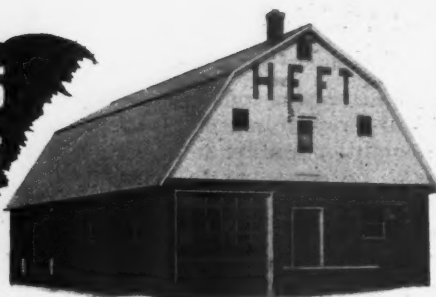
See Dobbins complete line of hand and small power sprayers and dusters at your hardware or garden supply store.

**DOBBINS MANUFACTURING CO.**  
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**Dobbins**  
*Superbilt*  
SPRAYERS • DUSTERS

**HIGHEST PRICES**  
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Vegetable Crop

--Your own  
**STORAGE PLANT** *Pays for itself*



Scores of fruit and vegetable growers are boosting their cash income by constructing their own storage plant of Kalamazoo Glazed Hollow Tile. Double walls insulated with Falco wool. Moderate in cost and holds your crop for top prices.

Don't be at the mercy of the buyer or pay high storage charges. Write at once for complete bulletin, giving all the facts for storage plants, also, other farm buildings and tile silos.

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**KALAMAZOO 16 MICHIGAN**

EVERYTHING FOR  
THE ORCHARD  
IMMEDIATE DELIVERY





TYSON ORCHARD SERVICE

WRITE FOR BOOKLET — FLORA DALE, PA.



From where I sit ... *by Joe Marsh*

## From Sheepskin to Sheep

There aren't too many college graduates in our town. Good honest thinking, yes... but most of our folks went from high school straight into farming.

No harm in that! But I admire veterans like Dick Newcomb... who's 23, but going to college under the G.I. Bill of Rights. Intends to be a sheep farmer—but a better-informed, more scientific farmer, with more know-how!

And veterans like Dick aren't letting anything interfere. What little relaxation they allow themselves is in the form of needed exercise, or good books, or conver-

sation, and an occasional glass of mellow beer with friends.

Seems as if by having their education postponed, they've put a much higher value on it... and on things like temperance (that glass of beer, for instance), understanding, and good citizenship. From where I sit, when Dick gets his sheepskin—he won't have lost much time. He'll be an even better farmer than his Dad. (Exactly what Dad wanted!)

*Joe Marsh*

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# NEW

## Touch Control

At a "finger-tip-touch" the farmer can now lift, lower, and operate the adjustments of all implements which are attached directly to a Farmall tractor. This touch control is a new development of the International Harvester Co. Two thousand pounds of hydraulic pressure come direct to each power arm at the center of the tractor and are available immediately for lifting the implement or forcing it down whether the tractor is moving or standing still.

## Orange Peeler

Peeling oranges and grapefruit is made easy with a handy gadget called the "Peelmaster." Manufactured by the Norvel Products Corp., it is a stamped steel device with a stainless steel cutter and a spoon-like end. A slot is first cut around the fruit, and then the spoon end is inserted under the skin removing the skin in two round cups leaving the fruit intact.

## Gas Can

A handy gas can which is easy to stow and to carry is now being manufactured by the Alva T. Smith Co. According to the manufacturer it is doubly safe and there are no springs or valves to get out of order, adjust, or leak. Other features are automatic hose return and visual filling.



## Insecticide Unit

The introduction of a new insecticide dispenser is being made by Eston Chemicals, Inc. They call it the Eston Aerosol Household Insecticide Unit, and its new features are "finger-tip" control and a low pressure "Freon" propellant. The active ingredients of the spray solution include 3 percent DDT and pyrethrins. According to the manufacturer it can effectively cover 100,000 cubic feet, which is about 100 average rooms.

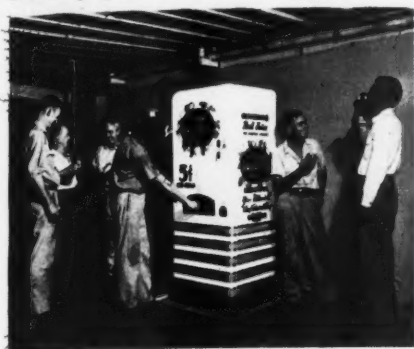
**AMERICAN FRUIT GROWER**



- INSECTICIDE UNIT
- ORANGE PEELER
- TOUCH CONTROL

## Vending Machine

A coin-operated juice vending machine has been developed for the citrus industry. It will be distributed to manufacturing plants, hotels, theatres, restaurants, drug, grocery, and department stores. Called the "Dispensolator," it is being manufactured by the Snively Vending & Sales Co. It dispenses cold canned citrus juice from sterile cans into sanitary paper cups.



## Spray Hose

Spray Hose Associates are offering to the fruit growers what they claim to be the latest development in spray hoses. The hose is strong, light, and flexible, made of rayon cord with all brass couplings, and has a working pressure of 800 lbs. According to the manufacturer the hose is resistant to the oils contained in pesticide chemicals.

## New Labels

New labels are featured in the latest packaging of Cuprinol, a naphthenate preservative for wood. Full directions are given on these labels in regard to application, coverage, and uses. The name Cuprinol appears, in its identifying diagonal lettering, in bright colors on the front and back. Varnishing of the label assures a fresh appearance on the dealer's shelves.

## Booklets

● A review of DDT's economic benefits to growers and the health benefits to others by the elimination of disease-carrying insects has just been issued by the Geigy Co.

● "Fire Safety on the Farm" is a new pamphlet being distributed free of charge by the National Board of Fire Underwriters. It summarizes the causes of fires, their prevention, and methods for fighting them.

APRIL, 1948

## Do Your Spraying with WISCONSIN-POWERED EQUIPMENT



Wisconsin-powered Silver Cloud Sprayer, made by The F. E. Myers Co., Ashland, O.

When you are working against time and weather . . . you can't afford to risk power failure of your spraying equipment at this most critical time. And the best way to protect yourself against this possibility is to use WISCONSIN-POWERED EQUIPMENT.

When you invest in new spraying equipment . . . or require an engine replacement for your present sprayer . . . be sure to specify "Wisconsin Air-Cooled Engine" for heavy-duty serviceability and all-weather dependability. Wisconsin Air-Cooled Engines are used as standard power units by leading manufacturers of orchard and farm equipment, to meet all power requirements within a 2 to 30 hp. range.

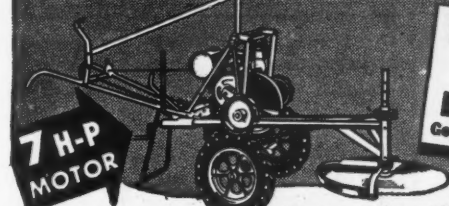
Write for illustrated descriptive pamphlet . . . and see your local Wisconsin Engine dealer or orchard equipment distributor.



## WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines  
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## A NEW ONE-MAN SAW



**OTTAWA**  
Self-Propelled  
**BUZZ MASTER**  
Cuts anywhere on own power

There is no other like it. Two speeds for cutting heavy brush and for road travel. Propels itself as it saws on hills and level ground. Use powerful engine for belt jobs when not sawing. Post hole digger and sickle bar attachments available. Buzz Master eliminates drudgery of clearing land, making fence and mowing. OTTAWA leads for fast and profitable sawing. Strictly a one-man machine. A woman or boy can operate. It costs too little to do without. Sold only direct to user. Patents pending on valuable and necessary features. Beats pushing out trees with heavy machinery. Make BIG money. Write for Free details, prices.

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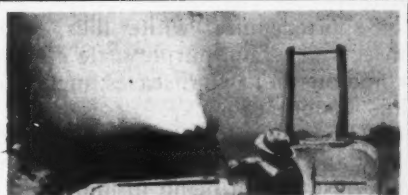
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Spray easily—Spray thoroughly. Spray and drive your tractor—Save money with

## HAMILTON SWIVEL GUNS

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Bangor, Mich.

Spray guns of all types—30 years' experience

## UNITED'S B. B. (BLOCK BAKED) CORKBOARD INSULATION

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Assures maximum insulation efficiency at minimum cost. Moisture-resistant, compact, light weight, sanitary, structurally strong, flexible.

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Advanced Design, New Features  
for Easier, Faster, Better  
Spraying. Now Ready for You



**New**

**HUDSON**  
Power Sprayer on  
pneumatic tires  
• 30 or 50 gal. tank  
• 2 or 4 gal. per min.

**New**

**HUDSON**  
Power Sprayer  
on skids for use  
on trucks,  
trailers  
• 30, 50 or  
100 gal. tank  
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per min.

**New**

**HUDSON**  
"Trail-A-Spray"  
• 150 gal. tank  
• 2 or 4 gal. per min.

• Save time—save back-breaking work—with a power sprayer. Just be sure it's a new HUDSON—the most advanced power sprayer ever made. More efficient pumps, new agitators, new nozzles apply spray materials the right way for best results at lowest cost. Rugged all-welded chassis, stainless steel valve assembly, slow-speed long-life pumps assure trouble-free operation.

Hudson power sprayers apply any liquid that can be sprayed: 2, 4-D weed killer, insecticides, fungicides, disinfectants, white-wash, etc. . . in fields, orchards, barns and buildings, everywhere.

See Your HUDSON Dealer, or  
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*Tested and Proved*  
Sprayers and Dusters  
Poultry Equipment  
Hay Tools and Barn Equipment  
Livestock Equipment  
Farm Ventilation Equipment

## CO-OPERATION DOES IT!

(Continued from page 25)

tion is practised until fall. Any number of cover crops may be grown if desired. Besides protecting the soil from the intense heat of the summer sun, the cover is grown to add organic matter to the sandy soils. The cover crop is mowed or chopped into the soil once or twice during the summer to keep it from going to seed. When fall approaches, rains diminish, and the cover crop must be disced into the soil thoroughly. It must not compete with the trees for the soil moisture. The groves are kept clean throughout the winter.

Irrigation is a major grove operation. The winter months, during the harvest period, are frequently very dry and irrigation is necessary to boost yields and quality of the crop. It is done with sprinkler type portable pipe. Scattered over the groves are 12 deep-well pumps supplemented with six portables, each having a capacity of 1,000 gallons per minute. The Association also owns and uses 10,500 feet of portable mains, 16,000 feet of permanent mains, 16,200 feet of sprinkler pipe, 4,600 feet of distribution pipe, and 4,000 feet of flood pipe. That is what it takes to irrigate 3,500 acres of citrus. Water is applied at the rate of about 2 acre-inches to 10 acres per hour, and about 75 percent of the pipe is in use at one time. Water is pumped from wells, lakes and ponds, depending upon which is the most convenient for the grove being irrigated.

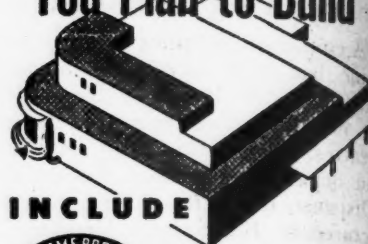
Grove manager Thullbery's spray records are just as complete as his fertilizer data. They tell almost to the very hour when a particular application was applied, what pests were controlled, what materials and concentrations were used, and the sprayman who did the job.

Four Speedsprayers, with six supply units, and seven conventional power sprayers take care of the spraying on the Haines City groves. Four or five, and occasionally six, applications are made, depending upon the pests. The chief troublemakers are rust mites, purple and six-spotted mite, white flies, scale insects of which purple scale is most common, and two diseases, melanose and lemon scab.

Harvesting and packing begin in July and continue until October, the heaviest season being in mid-winter. At the height of the season, most of the Association's 70 trucks are busy day and night carting the huge crop from grove to packing house and processing plant.

About 125 pickers are required to harvest the 3500-acre crop. A good

## in that FRUIT STORAGE You Plan to Build



INCLUDE



**PALCO**  
INSULATION  
**WOOL**

Efficient cold storage of fruits and vegetables requires more careful planning today than ever before—so before making plans get your **FREE PALCO WOOL PLAN BOOKS**—Don't delay—**WRITE TODAY.**

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picker can snip off 80 or 100 boxes of oranges a day, 115 to 125 of grapefruit, or 40 to 50 boxes of tangerines. In the 1946-47 season, pickers received 15 cents per box for oranges, 9 cents for grapefruit, and 30 cents per box for tangerines.

Citrus fruits are not picked in the same way as deciduous fruits. The time is determined not by firmness or color of skin, but by the amount and nature of the fruit juice. The maturity standards as established by the Florida Department of Agriculture state that the juice must contain a certain percentage of solids before it can be picked. It must also contain a specified minimum percentage of juice, and the ratio of solids to acid in the juice must be above a given figure before the picking crew can be sent into the grove. The time of picking is determined by the packing house manager.

When ready to pick, the fruit may not be of a desirable yellow color. In this case, it must go directly from the grove into the degreening room in the packing house. The fruit is held there for 24 to 70 hours at a temperature of 85° and a humidity of 85 percent. Ethylene gas is added to bleach out the green color. Fruit of good color bypasses this treatment and goes directly into the washers.

In these machines, the fruit is washed and scrubbed in soap suds to remove dirt, scale and spray residue. It then passes through a spray rinse of cold water into an eliminator which removes the excess moisture, and thence into the dryer. At this stage oranges may take another course and pass through a "color added" machine which adds an orange dye to the surface. The demand of the trade determines whether "color added" is to be used.

After drying, the fruits are waxed to heighten their polish and attractiveness. The final steps before boxing are grading according to outward appearance and according to size. Unsound and decayed fruits are picked off the sorting belts and dropped into the cull chutes. Sound fruits, but of low grade, are picked off and conveyed into large bins to await hauling to the co-operative processing plant. Those remaining are separated into various grades: 1, 2, and 3. Factors which will lower a grade are wind injury, melanose, miscellaneous injury, scale, off-color and rust mite.

After grading, the fruits are run through the mechanical sizers. Any number of different sizes can be selected by adjusting the machines. The fruits are dropped into various bins, each of a given size of fruit,  
(Continued on page 54)

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### CHIPMAN DDT SPRAY POWDER

*Kills Codling Moth*

A wettable powder containing 50% DDT. Used in water suspension sprays. Also kills other fruit insects.

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A wettable spray powder containing 12% gamma isomer.

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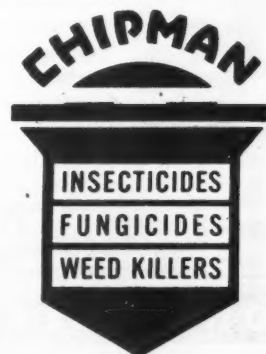
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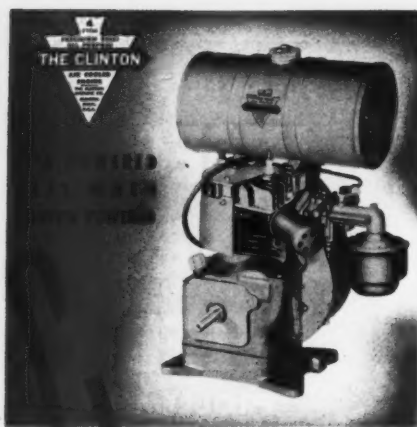
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## CO-OPERATION DOES IT!

(Continued from page 53)

from which the packers place them by hand into the crates for shipment.

At the height of the season the Haines City Citrus Growers' Association has on its payroll some 600 employees. The 125 workers in the packing house can pack out about 10,000 boxes of oranges per day, an equal number of grapefruit, and 5,000 boxes of tangerines.

What value could be placed on such an organization? In terms of money, last year its total assets exceeded \$750,000. Operations are on a relatively large scale, and expenses are great. Last year its labor bill totaled \$600,000, and its outlay for spray materials alone added up to \$30,000.

In terms of value to the grower-members, it probably cannot be measured entirely in figures. To many it simply means the difference between making some profit or not raising citrus at all.

## BOOK REVIEWS

• **Dwarf Fruit Trees (\$2.50)**, Macmillan, by Lawrence Southwick. This book was written for the man with a small lot who wants to plant various kinds of fruit trees. It describes in detail the selection, planting, and cultivation of dwarf fruit trees, which have been developed only recently and which are handled differently from standard trees.

• **A Catalogue of Insecticides and Fungicides, Vol. 1: Chemical Insecticides (\$6.50)**, Chronica Botanica, Waltham, Mass.; Stechert-Hafner, New York, compiled by Donald E. H. Frear. Written primarily for research workers in entomology, plant pathology, and agricultural chemistry, this is a compilation of more than 10,000 chemicals, plant species, and miscellaneous materials which have been tested for the control of insects and plant diseases. The chemical name, synonyms, and complete formula, along with the results of the insect and fungus tests and one or more literature citations, are given for each material.

• **Welding Helps for Farmers (\$1.00)**, James F. Lincoln Arc Welding Foundation, is the story of various farmers' experiences, told by farmers, in building tools and equipment with the aid of welding. One section of the book is devoted to directions for learning to arc weld and another to general information about welding.

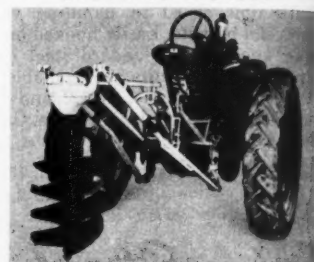
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## BLOSSOM THINNING

(Continued from page 45)

the calyx applications of App-L-Set severely reduced the set of Delicious and Baldwin. In other blocks of these varieties, where conditions affecting the set of fruit were favorable, the same treatment resulted in a very satisfactory degree of thinning.

Before using any early-season treatment for thinning, the operator should have a thorough understanding of the main factors involved in fruit setting. The amount of fruit which survives to mature, after the natural drop, depends on many factors. Important ones are: provision for cross-pollination, weather at bloom time, previous crop, condition of foliage the previous season with respect to insect and disease injury, vigor of fruiting wood, nitrogen supply, and soil conditions such as moisture supply and soil aeration.

Experience with fruit setting within a given block over a period of years and careful observations during bloom are most important in deciding whether or not fruit thinning sprays should be used.

This article is merely an attempt to describe a few materials which have been used for the chemical thinning of apples and present some of the results. No recommendations are implied. Should any material used during bloom ever prove harmful to bees under orchard conditions, its use would be prohibited by law. It is necessary to give protection to these useful insects because of their value in cross-pollination.

## NATIONWIDE FRUITS

(Continued from page 27)

is most often affected by apple measles, and by various methods tried tying up the manganese in the soil so that it could not affect the tree roots. They also studied other nutritive factors to see if they affect the presence of the disease.

Experiments with air purification of cold storages indicate that as much as 20 percent has been added to the storage life of certain varieties of northeastern apples. Dr. Archie Van Doren of the State College of Washington Agricultural Experiment Station reports that "if similar results can be achieved with western varieties of fruit, this practice may have real significance in the cold storage methods of the West."

Three experiments have been set up in Washington using identical lots of fruit. A specially constructed adsorption unit with a circulating blower draws a complete change of air

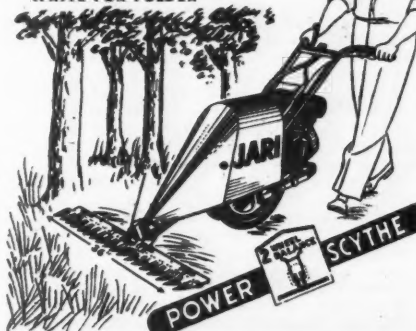
(Continued on page 56)

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## NATIONWIDE FRUITS

(Continued from page 55)

through adsorption trays every 25 minutes while the temperature is maintained at 32° F.

Determining the length of storage life and the effect of air purification on apple scab will be part of the testing. Through the use of immature, mature and overmature fruits, checks will also be made on the effect of fruit maturity on storage life. Each storage will be inspected periodically, and in addition to tests for color, firmness, soluble pectin, and soluble solids, experiments will be made with each lot of fruit to see how long it will stay firm, edible, and of marketable quality when placed in a damp room at 70° F.

## NUTS

● When compared with other deciduous fruits and nuts in relation to the value of a crop and its returns to the grower, the almond comes up seventh on the list. The production of almonds is an important and established industry in California with the number of acres gradually increasing until only oranges, peaches, prunes, and walnuts exceed in acreage. Along with greater production, however, have come increased costs. An average cost for the years 1935-1940 was 14 cents per pound in-shell. In 1943 costs had risen to 19 cents and in 1946, because of a marked rise in labor costs (\$1.00 an hour for most of the state), sprays, fertilizers, sacks, and green-manure seed, the cost went to 20 cents. But to compensate for all these increased costs, greater yields have been produced. Better cultivation, improved frost protection, greater use of fertilizers, more and better spraying and pest-control, more attention to pruning, and more and better use of irrigation water have all helped to increase production and yields. The almond industry in California is continually adding to the agricultural wealth of that state.

● Pecan trees will produce a maximum yield only when properly fertilized and cultivated according to John A. Cox, Louisiana State Extension Horticulturist. Insects and diseases must also be controlled; this can be done by either plowing under or burning up all leaves, shucks, and other trash around the trees which might harbor insects.

Before breaking the land or plowing under the cover crop, fertilizer should be applied at a rate of about 2 pounds per year age of trees. If there is no winter cover crop, about 200 pounds of nitrate of soda per acre should be applied to hasten growth.

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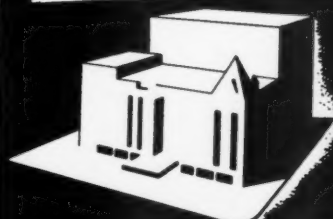
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around the house, the fertilizer can be applied through holes in the ground made by pipes or similar means, thus leaving the grass unfertilized. The holes should be spaced evenly so that the greatest number of roots will profit by the application.

● Italy has a good quality chestnut, the Marrone, but it lacks blight-resistance; The United States has a blight-resistant variety, developed by crossing native with resistant Chinese kinds, but it needed an improved quality. And now both countries will be able to improve their chestnuts because they are exchanging pollen, scions, and nuts to develop new hybrids.

The pollen is shipped air mail which saves several years time; the old method was to send the seeds and scions by ship, grow the trees to fruiting stage, and then cross-pollinate them. For shipping purposes the ripe pollen is placed in a stoppered vial which is placed inside a larger vial containing some chloride of lime to absorb excess moisture and prevent molding.

Some of the hybrid nuts from these crosses of American, Chinese, and Italian chestnuts have been harvested in Italy, and the trees will be tested for blight-resistance. This spring Dr. Aldo Pavari of the Forest Experiment Station at Florence, Italy, will send pollen from selected Italian varieties to the USDA's Plant Industry Station in Beltsville, Md.

## CHERRIES

● The destructive European Starling which has plagued eastern growers by destroying their cherries has made its first appearance west of the Cascade range according to Stanley G. Jewett, federal biologist. In southeastern Oregon last year it was designated a predator by the legislature because it caused so much damage to fruit. In spite of its threat to growers, however, no funds have been set aside as yet to control the Starling.

● Cross-pollination of crops by bees is more important than most growers realize according to Dr. George M. List, chief entomologist for the Colorado A & M College Experiment Station. He reports that one bee can carry as many as 100,000 grains of pollen. A grower in Grand Valley has found that bees placed in his sweet cherry orchard produced "astonishing" results—trees which had never produced a full crop in 15 years were loaded with fruit.

APRIL, 1948



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**Kelly**  **FRUIT TREES**  
for Spring Delivery  
We are one of the largest growers of Fruit Trees and supply Quality True-to-Name Trees at fair prices. Send today for our 1948 catalog. Good fruit trees continue to be scarce. Order early to avoid disappointment. Satisfaction Guaranteed. Our 68th Year.  
**KELLY BROS. NURSERIES, INC.**  
155 Maple Street Dansville, N. Y.

**EVERBLOOMING \$1**  
**4 ROSES**  
QUEENS OF THE FLOWER WORLD!  
4 strong, heavy-rooted everblooming rose bushes in best colors: reds, pinks, whites, yellows—ALL FOR \$1! Will bloom this spring. SEND NO MONEY—WE SHIP C.O.D. Just pay postman \$1 plus postal charges. SATISFACTION GUARANTEED—ORDER TODAY!  
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**High Quality Nursery Stock  
for FRUIT GROWERS**  
Apples Cherries Grapes  
Pears Plums Currants  
Peaches Apricots Berry Plants  
Quotations Furnished Any Time  
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**IMPROVED, GRAFTED NUT TREES**  
Also save your fruit, plant nutberries for birds—select Honey Locust for deer. Nut Trees, Persimmons, American & Chinese, Blueberries. List free. Descriptive bulletin 25c. Nut Tree Nurseries, Box 65C, Downingtown, Penna.

**THE MONROE**  
**ILGENFRITZ' Nursery**  
SINCE 1847  
1847—Our One-Hundredth and First Year—1948  
Your best assurance of lasting satisfaction.  
Plant our hardy Northern grown fruit trees, inspected, true-to name, of finest quality, for guaranteed dependability.  
Your requirements will receive our immediate attention.  
**ILGENFRITZ NURSERIES, INC.**  
THE MONROE NURSERY • MONROE, MICHIGAN

## OPPORTUNITY ADS

Only 15c a Word—CASH WITH ORDER. Count each initial and whole number as one word. ADDRESS AMERICAN FRUIT GROWER, 1370 Ontario Street, Cleveland 13, Ohio

### BEEES

FLOWERS QUALITY ITALIANS: THAT WILL STAND the test, gentle, real honey gatherers, 1-26—2 lb. pkg. \$4.40; 27-100—\$4.10; 3-lb. pkg. \$5.40; 5-lb. pkg. \$6.40; 6-lb. pkg. \$7.40; 7-lb. pkg. \$8.40; 8-lb. pkg. \$9.40; 9-lb. pkg. \$10.40; 10-lb. pkg. \$11.40. All packages with young queens. Prompt shipment live delivery guaranteed. FLOWERS BEE COMPANY, Jessup, Georgia.

### CHAINS

CHAINS—TRACTOR, TRUCK, ROAD GRADER, BUS. Write for circular, give tire sizes—Prompt shipment. HORNER TRACTOR SALES, Geneva, Ohio.

### EDUCATIONAL

EARTHWORM CULTURE AND SCIENTIFIC BEE-keeping. Opportunities for profitable home industry. Write for valuable free bulletins. EARTHMASTER PUBLICATIONS, Dept. 7, Box 488, Roscoe, Calif.

### FERTILIZER

SCHROCK NATURAL HI-TEST PHOSPHATE (32-34% P<sub>2</sub>O<sub>5</sub>) Granular Ammonium Phosphate (16-20-0). Prompt Deliveries. Dealers Wanted. Fertilizer Spreaders. SCHROCK FERTILIZER SERVICE, Congerville, Illinois.

### FOR SALE—EQUIPMENT AND SUPPLIES

SPRAY GUN HOLDER. ENJOY SPRAYING WITH one hand. One arm sprayer. \$2.75 each delivered. APPLEWOOD SALES, Deerfield, Michigan.

FOR SALE—THE FOLLOWING SPRAYING EQUIPMENT in first class operating condition: 1-400 Gallon Niagara Sprayer on Skids, Pump and Motor completely overhauled, \$495.00. 1-300 Gallon Bean Royal "20" with Hercules Engine on steel wheels, \$650.00. 1-300 Gallon Meyer, 20 gallon pump with power take-off, tractor-trailer type, \$350.00. 1-1945 Model American Fruit Grower Speed Sprayer in new condition, price \$2650.00. 1-1940 Model American Fruit Grower Speed Sprayer in new condition, price \$2300.00. 1-Niagara Cyclone Duster with 4 cylinder Novo engine, on steel wheeled running gear, in new condition, \$500.00. 1-1946 Model Niagara Cyclone Duster on skids with 4 cylinder Novo engine, electric starter and lights, in new condition, \$650.00. Any of the above sprayers will be demonstrated at any time at Montrose Orchards, Monroe, Virginia. All above equipment well maintained and in first class operating condition.

tion. Interested parties please communicate with DAVID ARONOVITCH, 920 Commerce Street, Lynchburg, Virginia. Telephone 355.

NEW AND USED SPRAYERS, DUSTERS. TWO Speed Sprayers. Bushel Crates. Orchard Supplies. CORY ORCHARDS SUPPLY COMPANY, Cory and Indianapolis, Indiana.

NEW SELF-PRIMING PUMPS, 1 1/2 INCH. CAPACITY 600 to 800 gallons per hour with 3/4 h.p. Dry-lift 20 ft. No oiling or packing. "Unused Surplus" at 1/5 Govt. cost. \$15.50 prepaid. BRUCE DOPPS, 225 Baehr, Wichita, Kansas.

FOR SALE—DUNNING & BOSCHERT FOUR SCREW press with reversible platform 58 inch rack. JOS. FUCHS, Brooklyn Sta., R.D. 2, Cleveland 9, Ohio.

NIAGARA FRUIT TREE DUSTER WITH ENGINE. Fine condition. GEO. B. HAUSMAN, Route 2, Coopersburg, Penna.

ATTENTION STORAGE OPERATORS: TWO-TON Phoenix Ice Machine, two horse single phase motor, good condition. Priced right. Make good auxiliary unit or operate small storage. FLOYD HEYS, R.D. 2, Huron, Ohio. Phone Vermilion, Ohio 3840.

FOR SALE: HARDIE SPRAYER A. 1. CONDITION. CHEAP. KENNEYS ORCHARDS, Tipton, Michigan.

FOR SALE IRON AGE SPRAYER, 600 GAL. TANK, 43 gal. Pump, power takeoff. 800x34 Tires used one year, like new, also one 1947 Iron Age Duster, 600x16 Tires used twice. GEO. KIMMEL, Berrien Springs, Michigan. Phone 4791.

FOR SALE CIDER PRESSES, NEW AND REBUILT. All sizes. Also apple sizers. Supplies all kinds. Immediate delivery. Write for Prices. W. G. RUNKLES MACHINERY COMPANY, 185-187 Oakland Street, Trenton, New Jersey.

### HONEY

ORANGE HONEY 5 POUND PAID PREPAID TWO dollars. If you want to pollinate your crop and raise your own delicious honey get FREE CIRCULARS. BLUE BONNET APIARIES, Weslaco, Texas.

### HORSE TRAINING

"HOW TO BREAK AND TRAIN HORSES"—A BOOK every farmer and horseman should have. It is free, no obligation. Simply address BEERY SCHOOL OF HORSEMANSHIP, Dept. 1384, Pleasant Hill, Ohio.

### MALE HELP WANTED

WANTED: EXPERIENCED MANAGER FOR A 100 acre apple orchard situated northeastern Ohio. Attention given to suitable party. Reply AMERICAN FRUIT GROWER, Box No. 75, 1370 Ontario Street, Cleveland 13, Ohio.

### MISCELLANEOUS

CEDAR CHESTS—KNOCK DOWN. ASSEMBLE YOUR own for less than 1/3. Best Tennessee Red Cedar, solid. No Veneering or plywood. Beautifully designed—4 1/2" x 20". COMPLETE—handles, hinges, lock and self-sliding tray. READY-CUT, SIZED, MACHINE RAN. ED, COMPLETE INSTRUCTIONS. Only \$15.95 (F.O.B. Tennessee). ALAMATIC PRESSURE COOKERS. Nationally advertised at \$14.95. Full 4 1/2 quart size, \$8.95 (plus postage) WM. ADDAMS, 10800 Independence Ave., Kansas City 3, Missouri.

TRE-TEX RABBIT VARNISH—APPLY WHEN TREES are set. Saves every tree. Agents wanted in 2000 counties. TRE-TEX powder perfect adhesive in ANY DUST APPLICATION—IT STICKS. Testimonials. Eighth year. ORCHARDVIEW, Noblesville, Indiana.

FACTORY REJECTS—GENUINE IMPORTED BRIAR smoking pipes regular \$2.50-10 retailers. Have surfaced flaws not affecting superb smoking qualities. Priced below cost of manufacture. 2 for \$1.00. GAYLORDS, Dept. 12, Brockton 64, Mass.

PRINTING. REASONABLE. RELIABLE. SAMPLES 10c. HAROLD HAUS, Lancaster 7, Ohio.

ATTRACTIVE FARM STATIONERY. 100 LETTER-heads, 100 envelopes, Monarch sized, boxed, \$2.50 postpaid. HILLTOP PRINTERS, Box 196, Bellevue, Ohio.

MEN! LARGE SIZE SHOES. LARGE SIZE BOX! We specialize in large sizes 10 to 16, widths AA-EKE. Orford, hipots, work shoes. Guaranteed extra quality. FREE Catalog. KINGSTON, 489 Brockton, Mass.

PLAX, A PLASTIC GRAFTING COMPOUND. IDEAL for field grafting and top working. White adhesive, elastic, waterproof, lightweight. Requires no heating. Thoroughly tested. Sample quart \$1.50 postpaid. West of Mississippi \$1.75. Sole distributors. MOUNTAIN NUT COMPANY, 1436 Watts Ave., Roanoke, Virginia.

### NURSERY STOCK

2 YEAR LATHAM BEARING AGE RASPBERRY plants. 10—\$2.50. 25—\$5.00 Postpaid. C. H. BEND-DICT, Grand Junction, Michigan.

HARDY GRAFTED NUT TREES. CRATH CARPATHIAN English Walnuts, Black Walnut, Butternut, Heartnut. Price list on request. BEHNATH'S NURSERY, R. D. 1, Poughkeepsie, New York.

BLUEBERRY PLANTS. IMPROVED HYBRIDS. ONE year old 25c. Two year old 50c. FRANK BRAINARD, Route 4, Allegan, Michigan.

2 YEAR WILDER CURRIANT PLANTS. \$10.00 PER 100. LLOYD BROTHER, Ludington, Michigan.

"BRUNES MARVEL" NEW EVERBEARING STRAWBERRY. Outstanding flavor, wonderful canner and freezer, very sweet and hardy. Folder free. BRUNER STRAWBERRY NURSERY, Pequot Lakes, Minnesota.

FRUIT TREES GROWN ON SUNNYSLOPES OF Ozarks. CLARKSVILLE NURSERY COMPANY, Clarksville, Arkansas.

DEPENDABLE FRUIT AND NUT TREES, SMALL fruits, Ornamentals, and General Nursery Stock Combined catalogue and Planting Guide free. CUMBERLAND VALLEY NURSERIES, INC., McMinville, Tenn.

BLUEBERRY PLANTS. Wholesale and Retail. One, two, and three years. Certified. Early midseason and late varieties, bargain prices. GALETTA BROS. BLUEBERRY FARMS, Hammonont, New Jersey.

HARDY TREES, GROWN IN THE BLACK HILLS including Black Hills Spruce, Pine, Cedar and many other native shrubs and trees. Also, windbreaks, small fruit, fruit trees, etc. GATES NURSERY, Rapid City, S.D.

BAXTER'S BLACK WINESAP PLANT PATENT 610. A new and distinct variety of apple tree, vigorous grower, stout branches, very hardy, early and regular bearer, excellent storage and shipping qualities. GEM CITY VINELAND COMPANY, Nauvoo, Illinois.

CONCORD GRAPES—2 YR. VINES 10—\$2.00; 25—\$4.00; 100—\$15.00. 3 year bearing size 10—\$3.00. Cuttings 10¢ per 100. All postpaid. Other varieties. List free. IDEAL FRUIT FARM, Stilwell, Oklahoma.

STRAWBERRY PLANTS—BLAKEMORE. MISSIONARY at 100 for \$2.00; 500 for \$5.00; Postpaid, 1000 for \$8.00. Everbearing at \$15.00 per 1000. Boysenberry thornless at 20c each. JOHN LIGHTFOOT, Birchwood, Tenn.

ENGLISH WALNUT TREES FOR SHADE AND NUTS. Special on quantity. Other nut trees. Catalog free. MICHIGAN NUT NURSERY, Union City, Michigan.

IMPROVED BLUEBERRIES—DELICIOUS U.S. GOVT Hybrids large as grapes. 2 Yr. plants 60 cents each. \$6.00 per Doz. 3 Yr. Bearing age \$1.20 each. \$12.00 per Doz. All Prepaid. LATEST NEW INTRODUCTIONS NOW AVAILABLE. Pemberton, Atlantic, Dixie, Burlington, etc. 2 Yr. Plants \$1.50 each. \$16.00 per Doz. 3 Yr. \$2.50 each. \$26.00 Doz. GEO. C. MORSE, Williamson, New York.

RHODODENDRON, NATIVE AZALEAS, HEMLOCK Others. NATURE'S GREENHOUSE, Tallulah Falls, Georgia.

100 ROOTED CONCORDS \$4.00. NOT PREPAID. Limited surplus other varieties. PAGETT NURSERY, Anderson, Missouri.

WAYZATA BUSH-TYPE EVERBEARING STRAWBERRY, heaviest fall yielder, when irrigated, large well flavored berries. 50 Divisions for \$3.00. Easiest to pick. PAULSEN'S NURSERY, Minden, Nebraska.

LATHAM RASPBERRY TRANSPLANTS. 2 years old. Bearing age. State inspected. \$15.00 per hundred. R. D. RANDALL, Route 7, Saginaw, Michigan.

RIDERS NEW VARIETY STRAWBERRY OFFER—50 True Strain Streamliner Everbearing, or 100 Giant New Robinson, or 75 Minnesota 1118 Arrowhead Junebearer \$2.00 each, all for \$5.00. Gem or Minnesota 1166 Everbearing—100—\$2.25; 500—\$10.00; Premier, Bellmar—100—\$1.50; 500—\$6.00; 1000—\$11.00. Dunlap, Blakemore, Beaver—100—\$1.00; 500—\$4.50; 1000—\$8.50. 10 Concord, Moores Early or Cabo Grape \$1.00. 25 Eldorado Blackberry, Cumberland or Latham Raspberry \$2.25. 20 Mammoth Rhubarb or 50 Asparagus \$1.00. 10 Thornless Boysenberry \$1.00. 50 large blooming size mixed gladioli—\$1.00. Immediate shipment. Everything postpaid. Free Planting Guide Catalog. RIDER NURSERIES, Farmington, Iowa.

EVERGREEN TREE SEEDLINGS AND TRANSPLANTS. Many varieties. Free list. SUNCREST EVERGREEN NURSERIES, Johnston, Pa.

(Continued on page 59)

AMERICAN FRUIT GROWER

## FARM DOIN'S



He says send him to the Siberian salt mines if he can't have B. F. Goodrich tires like American farmers vote for 2 to 1.

American farmers did vote 2 to 1 for the open type tread—the B. F. Goodrich kind of tread. Farmers like these tires because they get more traction—less slippage. All tires slip a little bit. You know you can have 10% to 15% slippage without even realizing it. But with B. F. Goodrich open tread tires slippage is cut to a minimum.

That means fuel saved, more work done. Slippage is cut down because the tread cleats are unconnected. The tread is open and flexible. As the wheel turns, mud and trash drop out through the openings. The tread stays clean. The tire pulls evenly and firmly. Before you buy take a good look at B. F. Goodrich open tread tires.

An advertisement of The B. F. Goodrich Co., Akron, Ohio.



TAGER FOR A IN  
thern Ohio. Attraction  
AMERICAN PRUIT  
Street, Cleveland 11.

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ANSEMBLE YOUR  
use Red Cedar, and  
fully designed—4 ft.  
inches, lock and half-  
inch. MACHINE SAND-  
Only \$15.95 (F.O.R.  
RE COOKERS. 3x4-  
4 1/2 quart size, \$1.95  
0 Independence Ave.,

PLY WHEN TREES  
anted in 2000 counties  
in ANY DUST AP-  
pliance. Eighth year  
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IMPORTED BRIAR  
litters. Have surfaced  
qualities. Priced below  
YLIORDS, Dept. 130,  
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boxed, \$2.50 post-  
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RE SIZE SOX! WE  
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g. White adobe,  
quires no heating  
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e, Virginia.

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AGE RASPBERRY  
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CRATH CARPA-  
Butternut, Heart-  
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TREES. SMALL  
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BLACK HILLS IN-  
ar and many other  
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NT PATENT 011-  
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—\$2.00; 25—\$4.95  
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List free. IDEAL

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Boysenberry thorn-  
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IOUS U.S. GOVT  
its 60 cents each  
\$1.00. \$12.00 per  
INTRODUCTIONS  
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PREPAID. LIM-  
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gated, large well  
Easiest to pick  
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ERY OFFER—50  
r 100 Giant New  
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nesota 1166 Ever-  
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nap, Blakemore,  
8.50, 10 Concord,  
Eldorado Black-  
\$2.25, 20 Mam-  
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e mixed gladiolus  
nap, Belmar—100  
SERIES, Farm-

AND TRANS-  
NCREST EVER-

59)

GROWER

## BAR-WAY HOSE COUPLINGS



**WILL BE AVAILABLE  
IN FULL SUPPLY BY APRIL 15TH**

Although we have been working on full production, we just haven't as yet been able to catch up to the tremendous demand from dealers and users all over the country. However, by April 15th (barring completely unforeseen happenings) we can assure everyone that Bar-Way couplings will be available for immediate shipment and in dealers hands. Good news, indeed, for users of spray equipment... and, incidentally, if you're wondering why such a demand, take a look at the advantages of Bar-Ways:

**NO OTHER HOSE COUPLING  
CAN EQUAL THE BAR-WAY**

- FULL FLOW... no suppression of flow.
- STREAMLINED... nothing to catch.
- REMOUNTABLE... without the purchase of additional parts; use over and over again.
- HIGH (or low) PRESSURE... designed for high pressure (tested to 3000 lb., with 500 lb. pull) but equally efficient with low pressure (soft) hose
- GARDEN HOSE THREAD... for both 3/4" and 1/2" couplings; allows connecting to reduce from 3/4" to 1/2" without the use of adaptors.
- INTERNAL EXPANSION... no shrinkage of hose at coupling.

A free circular describing Bar-Way couplings will be sent upon request.

**BAR-WAY MFG. CO.**

80 CANAL STREET, STAMFORD, CONN.

WEST COAST REPRESENTATIVE  
383 BRENNAN STREET, SAN FRANCISCO, CALIF.

**SENSATIONAL VALUE!**

24K Gold Plated FRAME  
4 BASE CURVE LENSES

**Aviators' style  
SUN GLASSES**

Brand new Genuine 14-K. gold plated rims. Comes complete with attractive leatherette case. Precision made throughout. Pearl sweatband. 4 BASE CURVE SOFT GREEN LENSES. Optimum ground. Shuts out over 90% of the ULTRA VIOLET RAY. We add thousands up to \$5.00. Please add 12c for postage and handling.

**288**

**Send for FREE  
WAR SURPLUS  
CIRCULAR**

ORDER BY MAIL  
Mail orders filled same day as received. Please send remittance with order. ADD 12c for postage and handling. ABSOLUTE SATISFACTION OR YOUR MONEY BACK.

This circular lists over 150 WAR SURPLUS BAR-GAINS. You will also find many other outstanding values. WRITE TODAY!

**SIoux FALLS  
SURPLUS STORE**  
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**KINKADE GARDEN TRACTOR**  
and Power Lawnmower

A Practical Power Plow and Cultivator for Gardeners, Suburbanites, Florists, Truckers, Nurserymen, Fruit Growers. Easy Terms - Write Today.  
American Farm Machine Co.  
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**"ORCHARDKRAFT"**

**Grafting Compound**

For grafting and all tree wound work

Regular Grafting—Bridge Grafting—Coating Cuts—Filling Cavities

Write for information

**JOHN C. BACON CO., Gasport, N.Y.**

APRIL, 1948

## OPPORTUNITY ADS

(Continued from page 58)

PEACH TREES—SUNGOLD, MAYFLOWER, CHAMPION, Indian Cling, 2 to 3 ft. 10 for \$2.50. \$18.00 per 100. 50 Concord grapevines 2 year old \$5.00. PONZER NURSERY, Rolla, Missouri.

200 VARIETIES GRAPES, LATEST INTRODUCTIONS. French hybrids, etc. 3/16, 3/8" hose, 1000 ft. 57" lengths with couplings, \$1.00 postpaid. SCHROEDER VINEYARD, Hutchinson, Kansas.

STRAWBERRY PLANTS. INTRODUCING THE greatest new Cardinal King. 11 other new varieties. Free catalog. SUNNYSIDE NURSERY, R.D. 2, Bangor, Pa.

CERTIFIED PLANTS: THORNLESS BOYSENBERRY 25, \$2.50; 1000, \$40.00; STRAWBERRIES: Blakemore 100, \$1.00; 1000 \$5.50; Everbearing 100 \$2.00. THOMPSON NURSERIES, Spring City, Tennessee.

HIGHLY RECOMMENDED MINNESOTA APPLE, plum, pear, grapes, raspberry and strawberry varieties. Eleven apple trees low as \$7.65. Catalog free. SWEDBERG NURSERY, Growers, Battle Lake, Minnesota.

FRUIT TREES, NUT TREES, BERRY PLANTS AND Ornamental Plant Material—offered by Virginia's largest Growers. Write for Free Copy 48-page Planting Guide in color. WAYNESBORO NURSERIES, Waynesboro, Va.

## ORCHARDS FOR SALE

FRUIT FARM FOR SALE TO SETTLE ESTATE: U.S. highway 20, Westfield, New York. Apples, Pears, Peaches. Cold Storage for 12,000 bush. Write for details and list other farms. DEWEY CARLSON, Broker, Dunkirk, New York.

MIAMI VALLEY ORCHARDS FOR SALE, NEAR Miami, Ohio. Consisting of 105 acres. 60 apples, 5 peaches, 12 acres river bottom land, and thirty acres of good pasture with never failing springs, two large ponds. New six room modern house, new garage, good large storage and packing house and other buildings. Located on good road. ALBERT DONOWORTH AND SONS, Realtors, Harrison, Ohio.

FOR SALE—NEW ENGLAND APPLE ORCHARD. 400 acres splendid condition. Large quality crops. Nearby markets. Large cold storage plant—Buildings and equipment alone worth more than asking price of \$165,000. Write AMERICAN FRUIT GROWER, Box 76, 1370 Ontario Street, Cleveland, Ohio.

FOR SALE: IN FAMOUS WENATCHEE-OKANOGAN Fruit District. 45 acres, 30 acres high producing apple orchard. Produced 27,000 picked boxes in 1946. \$1,000 in 1947. Varieties: Delicious, Red Delicious, Winesaps and Jonathan. Completely equipped with tractor, truck, stationary sprayer, etc., small new home, with tenant house and cabins for help. A sacrifice at \$22,000.00 plus expenses of pruning, etc., after Feb. 1, 1948. Wire or write EASLEY AGENCY, Onville, Washington.

FOR SALE: 300 ACRES INCLUDING SEVENTY-FIVE acre full bearing apple orchard in Beaver County, Pa. AMERICAN FRUIT GROWER, Box 77, 1370 Ontario Street, Cleveland 13, Ohio.

FOR SALE: SEVERAL SOUTHERN VERMONT AND Champlain Valley apple orchards. Write for particulars. C. RUSSELL LITTLE, Fair Haven, Vermont.

100 ACRES IN WASHINGTON COUNTY. 1/2 mile from Ohio River, 1500 peach, 300 apple trees, all bearing age. Good 7 room house plenty out buildings. Free gas, good pasture. Two crops will pay price asked. C. S. PAYNTER New Matamoras, Ohio.

FOR SALE—PROFITABLE ORANGE GROVE. ON account of health of owner will sell my productive grove in Orange County, Florida, of sixty acres, yielding approximately 20,000 boxes annually. Income yield 10% to 12% net average last 12 years. Price \$1,000.00 per acre, which is 20% below market value. Terms to reliable party. ADDRESS: AMERICAN FRUIT GROWER, BOX 72, 1370 Ontario St., Cleveland 13, Ohio.

APPLE ORCHARD—50 ACRES, 20 IN APPLES, RED Delicious, Jonathan, Spys. Prime bearing condition. 3 acres asparagus bearing heavily. Balance Alfalfa meadow. New 6000 bushel storage building. Modern Residence. Equipment. Retiring. Priced sell quickly. R. A. WINSLOW, Route 8, Kalamazoo, Michigan.

## PATENTS

NATIONAL TRADE MARK COMPANY, MUNSEY Building, Washington, D. C.

## POULTRY

PEAFOWL. PHEASANTS. BANTAMS. GUINEAS Waterfowl. Thirty Varieties Pigeons, Stock, Eggs. JOHN HASS, Bettendorf, Iowa.

HELM'S PULLORUM PASSED CHICKS. HOLDER Three World Records. ROP Sired Matings, Sexed Chicks. Free Brooding Bulletins. ILLINOIS HATCHERY, Metropolis, Illinois.

FANCY PIGEONS, PHEASANTS, DUCKS, GESESE, Show Bantams, Rabbits, Dogs, Best Blood lines in U.S. AL-MARCE FARM, Donahue 1, Iowa.

RAISE TURKEYS THE NEW WAY. WRITE FOR free information explaining how to make up to \$5,000.00 in your own backyard. Address NATIONAL TURKEY INSTITUTE, Dept. 233, Columbus, Kansas.

SCHLICHTMAN'S U.S. APPROVED. PULORUM CONTROLLED chicks, per 100 prepaid, Leghorns, Rocks, Reds, Wyandottes, Austra Whites, \$10.90. Assorted \$8.95. Pedigree sired and sexed chicks. Free Catalog explaining 2-week replacement guarantee. SCHLICHTMAN HATCHERY, Appleton City, Missouri.

## TREE BANDS

YOU WILL SAVE MONEY AND SAVE YOUR APPLES if you continue to use chemically treated bands on your apple trees to control codling moth—satisfaction guaranteed. Write for prices and circulars to EDWIN H. HOUSE, Michigan Fruit Belt, Saugatuck, Michigan.

FOR BETA-NAPHTHOL TREATED APPLE TREE bands. Write M. A. KOELLER, Barry, Illinois.

## SHORT CUT TO BETTER BORDEAUX

NICHOLS

## TRIANGLE BRAND INSTANT

## COPPER SULPHATE

99% + PURE!

► SAVES LABOR... Mixes easily in spray tank. Eliminates stock solution, minimizes handling!

► SAVES TIME... Dissolves rapidly. No waiting for it to go into solution!

► SAVES MONEY... Dissolves thoroughly—no waste or sediment. Gives accurate control and greater safety in your mixtures—thus giving better protection and increased yields.

● FREE Send postcard today for valuable free booklet—"Bordeaux Mixture—Its Efficient Preparation and Use"

YOUR DEALER can also supply Triangle Brand Copper Sulphate in: LARGE CRYSTALS, SMALL CRYSTALS, GRANULATED and SUPER-FINE for regular Bordeaux Mixtures; also Monohydrated for Copper-Lime dusts. The oldest and the best known brand! Standard for over 50 years.

## 100 PRACTICAL USES

KILL WEEDS, crab grass, Canada thistle, stalks, weeds and roots. Destroy brush, caterpillar nests, dis-

posed trees, grasshoppers, chinch bugs, etc. Clear irrigation ditches, split rocks, burn tree stumps. Sterilize poultry houses, kennels, barns. Use as portable home fogger. Kill ice, thaw pipes. Safe, inexpensive. Burns only 1/2¢ per hour—14¢ per hour—satisfactory users. Write for FREE CATALOG

HAUCK MFG. CO., 46 Tenth St., Brooklyn 15, N.Y.

## PEACH TREES

All Leading Varieties, as Low as 20c Each. Write for 1948 Catalogue  
**CALL'S NURSERIES**  
PERRY, OHIO EST. 1877

## VEGETABLE PLANTS FOR SALE

HORSERADISH SETS ALL LENGTHS. RALPH MAYHEW, Sioux City, Iowa.

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# Ramblings

## OF A HORTICULTURIST

### Olden Days

**H**OW PLEASANT it can be, at times, to sit down with one's pipe and one's thoughts and think about the past. Sometimes it is fun to browse through old books and diaries just to see how certain colorful incidents from other people's lives have been woven into the complex pattern that eventually becomes the fabric of our life today.

From diaries and other records of early American settlers we learn that the earliest pioneers brought with them from Europe fruit seeds and trees of many fruit varieties. It would almost be impossible to determine the exact time when a particular fruit was first planted on American soil; but there are many interesting stories—some more tradition than fact—concerning some of the early fruit plantings.

In 1630 Governor Endicott of Massachusetts imported the first pear tree and planted it on his farm at Salem. He also planted some of the first apples brought from Europe to English colonies in the New World. This is, of course, one of the stories taken more from tradition than from authentic records, although it may be true.

Also according to tradition, Governor Peter Stuyvesant planted the first orchard in New York, and from records we learn that in 1647 he laid out his farm called "Bouwerie" on the site of present-day New York's Bowery. He planted many kinds of fruit, and from these Bouwerie orchards many grafts were undoubtedly disseminated through the Hudson Valley and eventually inland as settlement progressed.

In the autumn of 1681 William Penn came to America to establish his colony and settlement at Philadelphia. Two years later, after the colony was well-started, he sent back to Europe for various supplies, among them a number of grape vines. Thus, to William Penn goes the credit for establishing the first vineyard in America. Unfortunately, the planting failed in a few years, when he turned to the cultivation of native grapes with more success.



In his book, "Travels from Pennsylvania to Lake Ontario," published in 1743, John Bartram says that along his journey apples, peaches, plums, and grapes were growing about Indian villages.

When did America begin exporting fruit? The exact date cannot be determined, but a package of Newtown Pippins was shipped to Benjamin Franklin in 1758 while he was in London. His English friend, Collinson, after eating of these apples, ordered grafts of the variety to be sent to England from John Bartram of Philadelphia, and said, "What comes from you are delicious fruit. . . . (I hope that) our sun will ripen them to such perfection." Probably considerable trade resulted from this incident during the next several years, for the United States Treasury report of 1821 lists, in its division on exports, 68,433 bushels of apples valued at \$39,966.

Thomas Young may be credited with the first commercial nursery in New York, but William Prince started, at about the same time, what

eventually became the most widely known nursery in the East: the Linnean Botanic Garden at Flushing, N. Y. This was a few years before the American Revolution, and the Prince nursery remained in the family for four generations.

In 1790 William Prince planted pits from 25 quarts of Green Gage plums. Four of the progeny became varieties of importance during the next few decades, or even later. These were: Imperial Gage, Red Gage, Prince's Gage, and Washington. By 1828, the Prince nursery offered 140 kinds of plums for sale, and to this concern goes the credit for really starting plum growing in America.

But now it is time to close the books of the past and return to the problems of the present. There are a great many of them, but it gives a man courage to realize that others have faced and conquered the difficulties of fruit growing for hundreds of years before him. The problems have been met before, and they will be met now.—E.B.





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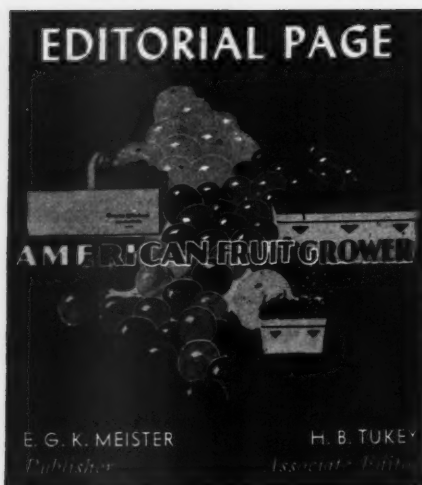
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## Research Takes Time

**W**HAT TYPE OF spray to use for blossom thinning is still a subject of discussion, despite the fact that it has been under research and experimentation for several years, and growers ask why it takes so long to solve many orchard problems.

The answer, of course, is that it is extremely difficult to get accurate and quick results with fruit trees which take a relatively long time to complete their life cycles. One scientist has estimated that it takes five times as long to get information about experiments with an apple or peach tree as it does with an annual crop. For instance, when working with blossom thinning sprays, there are only several weeks during the year when experiments can be completed. If work is not finished within that short period, a whole year must pass before that phase of the work can be resumed. The same applies to research with many other phases of fruit production.

Facts and their implications and applications are the basis of research. Facts which are newly discovered must be checked and rechecked. Results of experiments must be observed over the seasons to assure accurate conclusions. No research worker can accept a hastily-drawn conclusion that is not borne out again and again by carefully controlled experiments. Again, time is an all-important element.

When the fruit grower understands the complications and the patient work involved in research, he can see that if he wants good products and the best possible methods, he must wait for them to be developed. Quality results demand careful planning and research—and research takes time.

## Soil

ASIDE FROM the variety of the fruit, no factors influence the success of an orchard more than the site and

the soil. These two factors along with topography and climate determine the location of a successful orchard.

The soil characteristics that make for successful growth and long life are the physical characteristics. A shallow soil is to be avoided and a soil may be said to be as "deep" as the trees finally root. An open type of soil allows ready penetration of rainfall together with good natural drainage. This, in turn, is associated with good aeration. A compact soil is the reverse of what is needed. This can be determined in part by observing how recent rains lie on the soil or disappear. It may also be observed by measuring the water in drain tiles which have been superimposed on one another to a depth of about four feet. Four such test wells per acre give a good index of the rapidity with which ground water disappears, after a heavy rain.

Some good fruit soils fill with ground water to within a few inches of the surface after very heavy rains, but the water falls rapidly and in a day or two will be back nearly to the level obtained before the rain. Readings should be taken at three-day intervals. Well-drained soils contain almost no free water in the surface four feet except shortly after a rain; imperfectly drained ones will have ground water at almost the two-foot level for a month or more in May and June, while the poorest drained soils will be water-logged within a foot of the surface.

Trees may succeed, even flourish for a time, in shallow soils, but after a time of extreme drought, excessive rainfall, excessive freezing, or other untoward conditions, the result shows up in injured trees because of poor soil conditions.

## Fruit Production at a Glance

	1936-45	1946	1947
Apples bushels	112,806,000	119,410,000	112,503,000
Peaches bushels	62,936,000	66,643,000	62,981,000
Pears bushels	29,510,000	34,447,000	35,350,000
Grapes tons	2,578,920	3,119,500	3,083,800
Plums and Prunes tons (fresh)	707,660	791,000	672,300
Cherries tons	159,157	229,620	180,830
CITRUS			
	1936-45	1946-47	Mar. 1, Est. 1947-48
Oranges boxes	83,468,000	113,980,000	112,260,000
Grapefruit boxes	44,593,000	59,640,000	60,000,000



## It's A Mighty Good Sign

PERHAPS EVEN more important than DDT, 2,4-D, new mechanical devices, and the last word in orchard management is the spirit that is sweeping through production circles in the fruit industry to say, "This marketing problem is ours . . . we must do it ourselves!"

Too much of the fruit business has, until recently, operated on the "kiss-and-farewell" basis. The grower has been first of all a manufacturer. He has specialized in production. He has known soils, sites, fertilizers, pruning, spraying, and all the intricacies of culture. He has known his trees and his local situation intimately. He has been a wonderful plantsman.

This was all right for the days when the real problem was to locate the places and the varieties on which to establish a commercial fruit industry. It was all right when most people lived on farms and in rural communities. But the trend has been towards large centers of population—New York, Chicago, Philadelphia, Los Angeles. Problems of transportation and distribution have, in consequence, become of relatively greater importance. There can be no big city unless the foodstuffs can be gotten across the river, through the streets, into the shops, back down the streets, and up the elevators into the kitchens of apartments. Somehow, most producers have not been of a mind to carry through to the consumer. They too frequently have parted company with their products at the loading platform and have waited for the payment that sometimes turned out to be a bill.

In contrast, the automobile manufacturer does not stand at the end of the assembly line with stamp in hand to mark, christen, and say farewell to each car as it rolls out into the waiting world. Far from it. Even in the present sellers' market for automobiles there is a highly organized distribution and sales force waiting and watching for each car, to roll it along over a carefully planned route from hand to hand until it is lodged safely in the garage of the owner—and at a profit.

Here is why the spring of 1948 is important—because in production circles all over the country the feeling is spreading—especially among the younger men—that the manufacturer of an article must more or less follow that item clear through to the consumer. Some growers suggest that they may even have to control it all the way—may even have to finance it in order to keep control.

At all events, the feeling is here, and it's a mighty good sign.

AMERICAN FRUIT GROWER



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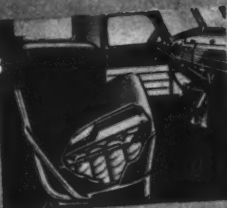
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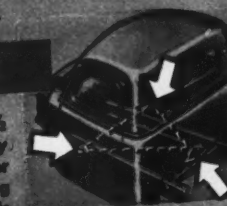
### new comfort

A new, built-in ventilation system automatically circulates fresh air, with fresh air heating available if desired. New, 2-way adjustable, seats have 73 individually wrapped springs.



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**CLEAN FRUIT SELLS**

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